

THE PHILIPPINE AGRICULTURIST



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U.P. COLLEGE OF AGRICULTURE

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The Philippine Agriculturist

Journal of the College of Agriculture and Central Experiment Station
University of the Philippines

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THE PHILIPPINE AGRICULTURIST

JOURNAL OF THE COLLEGE OF AGRICULTURE
AND CENTRAL EXPERIMENT STATION
University of the Philippines

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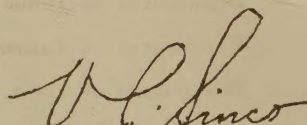
MESSAGE

There is reason enough to rejoice over the completion of the first fifty years of the College of Agriculture. The record of its alumni is outstanding. Throughout the country today, as well as in many places in Asia, graduates of the College have taken the initiative in raising the levels of agricultural education and practice.

But I want to believe that the challenge of the next twenty or thirty years is far greater and more exciting than the first half century. All the signs are there. The rapidly expanding population; the dwindling raw materials and natural resources; the remarkable new discoveries and advancements in science—all of these must draw an increased participation from agriculture.

For our country, the prospects are unlimited. And the challenge, in this sense, is unbounded. Working closely with science and technology, the College of Agriculture should be able to hasten the coming of an era of prosperity for our people.

With this thought, I greet the College of Agriculture on its Golden Jubilee.



V. G. SINCO

President

University of the Philippines

April 30, 1959

MESSAGE

Fifty years do not loom very large in the life of an institution. When the College of Agriculture was founded in 1909 its prospects were rather dim, considering the three previous frustrated attempts at establishing a college of agriculture, two in the nineteenth and one in the early twentieth century. It seems a paradox indeed that in a country whose basic economy is agricultural the occupation of farming has been traditionally looked down upon and not even regarded as a profession of collegiate standing. Hence, a college degree course in agriculture was something unthinkable and in many quarters not worth serious consideration. For this reason the College of Agriculture in Los Baños led a rather hectic early life, a Cinderella among sister colleges.

By slow and painful degree, step by stumbling step, it has managed to produce over the years a sizeable number of alumni who with their solid background of training, their healthy attitude toward work, a highly developed initiative and sense of responsibility, eventually proved that the Los Baños graduate is capable of making significant contributions to nation-building. Long before the outbreak of the second World War, Southeast Asian countries, notably Thailand, also sent their brightest students to Los Baños.

Because the war left the College in shambles, rehabilitation and growth were largely stultified even five years after peace had been declared. The institution of the ICA-NEC technical assistance program and later the various generous grants from American foundations and the Philippine sources have made it possible for the College to attain a degree of development unparalleled in its fifty-year history. The College has been able to build up a strong faculty which amply makes up for its youth and inexperience in enthusiasm and aggressiveness. The student enrollment has increased six to tenfold and the research output has come in more steady streams. The College has at last earned the recognition and appreciation due it not only in the Philippines but also abroad. Its growing position of leadership in the agricultural field cannot be denied. Our alumni of 3,859 have come to occupy key positions in the Philippines and in certain other countries in Southeast Asia and have been making their influence felt in the economic life of this part of the world.

L. B. Uichanco
L. B. UICHANCO
Dean

College of Agriculture

April 25, 1959

THE UP COLLEGE OF AGRICULTURE 1909-1959 ¹

NORA J. CRUZ ²

THE FOUNDING YEARS

Fifty years ago, on June 14, 1909, the College of Agriculture opened. It was the first university college of agriculture founded anywhere else in the tropics. It was the first college organized under the University of the Philippines.

If ever a college started from scratch, the U.P. College of Agriculture was it. It had no building, not a single piece of equipment, no table, desks or blackboard, not even a book. All it had were four teachers and 12 students lured away from the Philippine Normal School, then the highest government institution of learning. And it had 73 hectares of abandoned farmland in the barrio of Batong Malaki at Los Baños. The land nestled at the skirts of Mount Maquiling, an extinct volcano dotted with hot springs and watered by Mola-win River, and was flanked on the east by Laguna de Bay.

In the first week, classes were held in the houses of the faculty in the town of Los Baños. Later in the week two tents borrowed from the Bureau of Education were pitched at Camp Eldridge nearby. In the morning with the sun beating down on the canvas, the students were introduced to the principles of scientific agriculture. More than once during those trying months, typhoons blew the tents down or turned them inside out. In the afternoons the boys hiked the three kilometers to the College farm and wrestled with "field work." Actually it meant clearing the half-wild campus of weeds and underbrush.

The Pioneers

More than one student felt like quitting many times, but all 12 stuck: Silvestre Asuncion, Amando Laparan, Antonio Lejano, Florencio Bagui of Batangas; Baldomero Velasquez of Rizal; Felipe O. Cevallos and Andres F. Navarro of Albay; Vicente F. Allarey of Taya-

¹ General Contribution No. 892.

² In Charge, Office of Extension and Publications, College of Agriculture, U.P.

bas; Eladio Sablan and Valente E. Villegas of Laguna; Jose F. Zamora and Clodoaldo Tempongko of Manila. Perhaps they liked being pioneers, as did their four American teachers. Side by side teachers and pupils grubbed stumps, dug ditches, attended to plumbing, plowed the land, and planted.

The four faculty members carried all the courses in the curriculum and more. Edgar Madison Ledyard taught zoology and entomology and was property officer, disbursing officer and cashier, and later superintendent of buildings and sanitation. Mrs. Ledyard taught German, French and English. Harold Cuzner was farm superintendent. A little later Sam B. Durham joined the staff as instructor in animal husbandry.

PO Address: College, Laguna

At the heart of this venture to put together a college out of the makeshifts at hand was Dr. Edwin Bingham Copeland, a plant physiologist at the Philippine Normal School before he became founder and first dean of the College of Agriculture. In 1907 he had been assigned by the Acting Director of the Bureau of Education to select a site for an agricultural school. After surveying likely places in the provinces of Rizal, Nueva Ecija, Cavite, Negros Occidental, and Laguna, Dr. Copeland narrowed down his choice to Los Baños. In his report he explained:

"For the school as a purely educational institution, the best site I have seen is Gagalit [a barrio of Majayjay, Laguna]; but it is a poor place for an insular experiment station, because of its exceptional coolness. For an experimental station, purely as a place for research, La Granja [in Negros Occidental] has the greatest natural advantages; but for a school, it is the least desirable place under consideration, because it will surely attract the fewest students. Considering both demands on the site, I can without hesitation recommend that near Los Baños as the best with Lake Calibato [in the barrio of Rizal, Nagcarlan, Laguna] as second."³

Both demands had to be satisfied, for the college as envisioned by Dr. Copeland would not only teach but do research work as well. His decision established the address of the College at the foothills of Mount Maquiling, and there it has remained these 50 years.

³ B. M. Gonzalez, *Philippine Agriculturist*, 18, 243 (1929).

Rugged campus life

In October, 1909, the first College building was completed, and thereafter all classes were held on the campus. Since there were no boarding houses, the boys built themselves houses of nipa and bamboo on one side of the Molawin River near the new building. They raised their own gardens and got their own meals. When money was scarce they subsisted on papayas and guavas and on credit. One of the boys ate boiled duck eggs for breakfast, lunch, and supper every-day for three months because only the duck egg vendor thought him a good credit risk.



The first building of the College of Agriculture. Called the "temporary building," it housed classrooms, administration offices, tool shed, library, and later the post office. As other buildings rose on the campus, it became known as the "old College building."

The all-purpose Molawin waters did for bathing, drinking, and laboratory experiments. When the river ran high, the boys hauled themselves across on a cable and went off to classes barefoot and dripping. The farm superintendent was authorized to employ students for farm labor at 10 centavos an hour. On this wage rate the enterprising ones supported themselves while going through the regular college course.

For students and faculty during the first decade of the College, the academic life was an unusually rigorous life. It took vision, enthusiasm, and just plain grit to survive. Typical of the demanding work were the botanical climbs to Mount Maquiling and Mount Banahao. Led almost always by Dean Copeland himself, they were "musts" for all students. Only one was known to have dodged the trip with impunity—Gerardo O. Ocfemia—who was to become the leading plant virologist of the Philippines.



One of the homes in the Student Barrio in the early days of the College of Agriculture. The houses in the barrio were built by the students themselves at a cost of about ₱25 each.

Early curriculums

At the end of the first year 56 students were enrolled. They were either intermediate school graduates taking the six-year course for the degree of Bachelor of Agriculture or high school graduates who were allowed advanced credit and finished in four years, after which they received the degree of Bachelor of Science in Agriculture. Both types of students worked on a thesis requiring original research in their senior year.

In 1910 a formal four-year curriculum was organized.⁴ This curriculum served for 12 years with only some minor changes, as

⁴ See Appendix, p. 32.

when the two years of German were replaced by agricultural economics, farm accounting, farm practice, blacksmithing, and carpentry in 1917. In the same year, instruction in plant pathology and military science began.

The first master's degree in agriculture was granted in 1913 to Manuel Luz Roxas. Graduate study, then and now, was supervised by the graduate committee of the University.

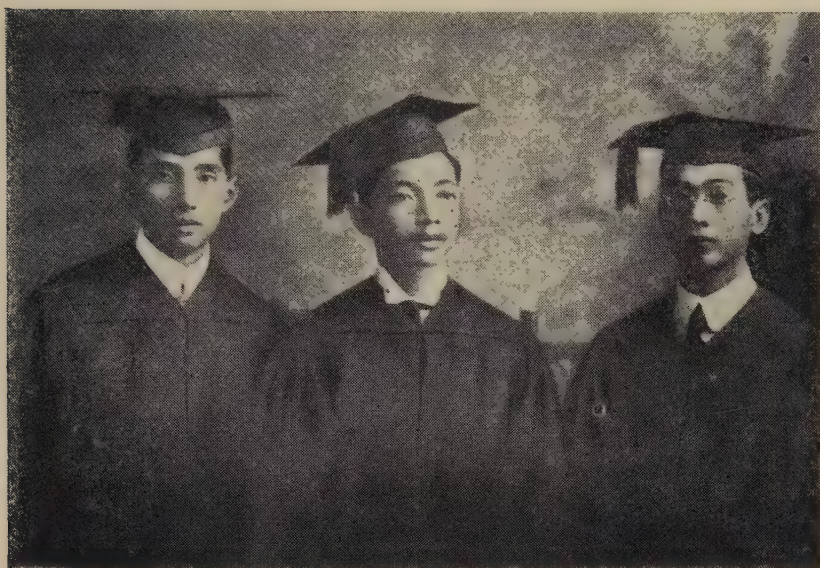
Policies are set up

The formative years of the College saw the formulation of policies which have remained virtually unchanged to the present. The College had committed itself to the teaching of scientific Philippine agriculture at a time when there was none to speak of. It meant that active research had to go along with instruction if the College was to operate on a university level. With the meager resources they could muster, the faculty and advanced students accepted the responsibility of building up modern farming knowledge through research. The tradition endures, despite the perennial lack of manpower, equipment, and facilities.

The founders early realized that the College would have to develop its own faculty. To this end, promising students were apprenticed to the regular personnel in their chosen fields of interest. Upon graduation they were taken in as assistants for continued training, sent abroad on fellowships and scholarships, and given more responsible positions when they got back. To a great extent the College still recruits its staff from its ranks of alumni. The policy has preserved standards of excellence as well as the indefinable but powerful Los Baños spirit.

First alumni

At the university commencement in 1911, the College graduated its first three products: Manuel Luz Roxas, Clodoaldo Tempongko, and Jose F. Zamora. Manuel Roxas elected an academic career and was appointed the first assistant in the College. He was later named pensionado and was the first alumnus to receive a doctor's degree. To him goes the credit for instituting the Sugar Technology curriculum and the Student Mess during his 17 years of service to the College.



The first graduating class of the College of Agriculture, class 1911. Left to right, Clodoaldo Tempongko, Jose F. Zamora, Manuel L. Roxas.

The two other graduates went out to farm, Tempongko on an hacienda in Calauan, Laguna, and Zamora on his father's hacienda in Tarlac. In a sense they were the first extension men of the College because they made it part of their farming duties to teach the less informed farmers around them. Clodoaldo Tempongko's career ended too soon, but Jose Zamora has served the College and the University long and well as regent and as officer of various agricultural councils, committees and associations.

Dean Copeland

Back in the early days, students minded their p's and q's when Dean Copeland was around. Behind his seemingly stern manner was the resolve to mold trained, self-reliant agriculturists who would push the development of the country. He steered the College away from being a mere farm school into the direction of becoming a real college for scientific training in agriculture.

When Dean Copeland retired in 1917, he left behind a self-respecting collegiate community of around 500 people occupying about 127 hectares of land. It had seven buildings, more than 2000 distinct

cultures, the nucleus of a herd, introduced plants under observation, and every important crop in the Philippines under cultivation. It had an organized student body, active in the classroom and in the athletic field, and more than 100 graduates banded together in an alumni association. It participated in expositions and farmers' congresses. Research results were published in the *Philippine Agriculturist and Forester*, first issued in 1911 as a student publication and later taken over by the College as its official journal.



Edwin Bingham Copeland, founder and first dean of the College of Agriculture, June 14, 1909, to August 30, 1917.

At the Administration Building of the College of Agriculture is a bronze tablet inscribed with these words:

"To Edwin Bingham Copeland, founder and first dean of the College of Agriculture 1909-1917. Dedicated in recognition of his services to the cause of agricultural science and education in the Philippine Islands. By the classes of 1911, 1912, 1913, 1914, 1915, 1916, 1917."

WIDENING HORIZONS

One late afternoon in 1912, three years after the College had been founded, Dean Copeland got out from a carretela with a slightly built stranger in a blue serge coat, white trousers, and a straw hat. The stranger was Charles Fuller Baker, professor of tropical agronomy at Pomona College in California, who had been talked by Dean Copeland into casting his lot with the handful of faculty at Los Baños. He stayed on for 15 years, the last 10 as the second dean of the College.

Policies carried over

Having worked closely with Dean Copeland, Professor Baker was fully aware of the College ideals. Sometime during his term he restated them:

"The prime function of the College of Agriculture is instruction of university grade in the sciences underlying agriculture, and in the practical application of these sciences. In other words, its work is the production of men of superior training in agriculture in the broad sense. At the same time, it is a perfectly well-recognized fact that none of the several lines of scientific work which compose what is called the 'science of agriculture' have yet been well developed in the tropics. Therefore, any possible development of higher education in tropical agriculture must go hand in hand with active technical investigation. There can be no other possible means of developing, in the tropics, a university college of agriculture."⁵

Instruction

A curriculum in animal husbandry was opened in 1921 for intermediate and high school graduates. In the same year the sugar technology course was instituted for high school graduates. A combined animal husbandry-veterinary science course was offered in 1926, again for high school graduates.

Instruction was on a high grade in spite of the frequent turnover of the predominantly American faculty. When a survey team from

⁵ Charles Fuller Baker, *Philippine Agriculturist*, 8, 1 (1919).

the University of Illinois went over the curricula, staff qualifications, finances, and academic standing of the University of the Philippines in 1923, only the College of Agriculture was given an "A" ranking.

Research

The research activities of the College were "legalized" in 1918 when a legislative act created the agricultural experiment station. The accompanying grant of ₱125,000 bought more land, animals, and equipment. No more money was forthcoming, however, and the faculty and students continued their investigations on whatever could be spared from instruction.

To overcome the lack of funds somewhat, the College began the policy of cooperating with other agricultural and scientific institutions, both foreign and local. Scientists were encouraged to set up shop on the campus and use College facilities, thereby permitting the staff and students to follow the work of these men at close range. The outcome of one such happy collaboration was the discovery by Frederick Muir, an entomologist sent out by the Sugar Planters' Association of Hawaii, of the parasitic wasp that effectively controlled the white grub attacking the roots of Hawaiian sugar cane. The pest had threatened the Hawaiian sugar cane industry and in appreciation, the association donated \$2,000 to the College for an insectary. It was the first gift given to the College by a private agency.

Those Los Baños excursions

As the campus grew in beauty, it became a favorite spot for conferences, expositions, institutes, farmer's days, and school excursions. The last especially were welcomed by the boys who languished for feminine company. A call for guides was a signal for a flurry of slicking up. Many a romance bloomed by the ornamental nursery garden whose natural charms were known to soften the most hard-hearted *colegiala*.

October 10, Loyalty Day

As far back as 1911 the students had organized themselves into a self-governing body and had set up committees on athletics, publications, accounts, social affairs, and domestic improvement. It was this well-knit student body, together with the teachers and employees, that enlisted to a man in the Philippine National Guard when the call came for volunteers on October 10, 1918. That day has since

been proclaimed Loyalty Day for the College of Agriculture when alumni come home and renew their pledge of loyalty to school and country. The feelings that prompted the demonstration have come to typify the Los Baños spirit, which is said to be a compound of loyalty, fellowship, scholarship, sportsmanship, and clean living. Alumni all over the world feel the pull of attachment when Loyalty Day approaches. It is the day for all true aggies.



Student volunteers of the College of Agriculture leaving for Camp Claudio in 1918. The mass enlistment of faculty and students in the National Guard on October 10, 1918, is now remembered every year as Loyalty Day.

Enter the girls

When one adventurous coed braved the womanless classrooms of the College in 1921, the boys perked up considerably. She did not stay long, but the next year another girl enrolled. Thenceforth Los Baños was no longer a man's college; the girls were to filter in a few at a time until the Home Technology curriculum in 1952 drew them in greater numbers.

The boys made much of the girls in the classroom and outside. In 1926 they elected sweet-voiced Mamerta Manahan, a graduate student in agricultural chemistry, as president of the Student Body. The next year Victoria B. Mendiola was made secretary. When she graduated in 1930, she became the first alumna of the College and the first woman plant pathologist of the Philippines.



A part of the student body, College of Agriculture, in 1929. The five ladies in the foreground were made much of by the predominantly male population of the campus.

Students and graduates

In athletics the Los Baños boys were conceded champions. Social needs were met through dances, parties, convocations, dramatics, and sings chiefly with the help of the English Department. The *Green and Gold* magazine came out in 1925, its colors symbolic of "the green of life and spring and the gold of harvest and fulfillment."⁶ There was no entrance examination, but delinquency lists were posted three times a year. Students from China, Siam, Guam, Java, and India gave the campus an international touch.

The growing number of graduates and former students of the College fanned out to serve as teachers, government workers, and farmers. They were serious young men, conscious of their responsibility to share their training and help develop the country. Two of them were honored with the Master Farmer degree in 1923: Florentino Cruz, '16, and Gregorio Francisco, '17. Jose F. Zamora had received the honorary degree earlier in 1917.

⁶ College and alumni notes, *Philippine Agriculturist*, 14, 447 (1925).

Dean Baker insisted on keeping in touch with the graduates and giving them all possible aid. One of his projects for them was a postgraduate reading list to improve their language and general education. The grateful alumni responded in kind. Joaquin Gonzalez, class of 1919, pledged himself in 1925 to award a medal every year to the graduate with the highest scholastic rating. The first recipient was Paul Sindhuravejña of Bangkok; the latest is Jose P. Gapud, class of 1959.

A community grows roots

Under Dean Baker the Los Baños college grew into a thriving community making substantial bids for recognition. Its quality graduates and laboratory findings were ammunition in the dean's unflagging fight for government support. He hammered away at the traditional Filipino prejudice against manual labor and the idea that farmers did not need to study in schools. Meanwhile, the young Filipino faculty like Bienvenido M. Gonzalez, Leopoldo B. Uichanco, Nemesio B. Mendiola, Manuel L. Roxas, Rafael B. Espino, Francisco O. Santos, Francisco M. Fronda, and Valente Villegas were making names for themselves in their fields. They were taking over more and more of the College duties and were at the same time getting married, raising families, and generally settling down as part of the community.

For material assets the College now had, among other things, a faculty of 88, a student body of 822 including 18 coeds, 369 hectares, 61 buildings, 130 courses, a library of 7,325 volumes, 789 published contributions including four books and 13 circulars, student dormitories and faculty houses, electric and water systems, about 10 kilometers of surfaced roads, a telephone service, an icehouse, a post and telegraph office, Catholic and Protestant chapels, a Cine Maquiling, and a cooperative store. The College was no longer an experiment; it had become a force in the economic growth of the country and a clearing house for information on tropical agriculture.

Emma Sarepta Yule

No history of the College would be complete without mention of Emma Sarepta Yule, guardian of good grammar and style on the campus from 1917 to 1936 when she was head of the Department of English and editor of the *Philippine Agriculturist*. She tailored the English courses to the needs of the agricultural students and,

with Dr. Sam F. Trelease, reduced technical writing on the campus to a concise, methodical form. *Preparation of Theses and Other Manuscripts* by Trelease and Yule, which first saw print in 1925, evolved from the editorial struggles to whip the campus scientific papers into shape.

Dean Baker

Many had a share in the building up of the College. Of the foreign faculty, the names of Hester, Reinking, Deming, Glodt, Herbert, Higgins, Gillis, Coccanouer, Woodworth, McWhorter, Madison, and a dozen others figure prominently. But head and shoulders above all of them was Dean Baker, said to be one of the greatest American educators to come to the Philippines.

Once, to a toast "Why is a College of Agriculture?" Dean Baker quickly replied, "For the students." Nobody ever failed in his courses because the students could not help but learn. He fired their young minds with his own enthusiasm and zeal for science. He was truly interested in their welfare, often helped them out with money, and waxed caustic in their defense when Filipino writers were critical.

Somebody said of him: "He never had much of a body, just some skin, and a bonerack over which hung some very sensitive and very lean muscles, and aside from this a pair of gentle, humorous and jaunty blue eyes, straight gazing and wonderfully penetrating."⁷ But his passion for work was so inbred that when the rains would wash away the bamboo bridge across Molawin Creek, Dean Baker was known to swim across to work away in his office far into the night.

Honed away by his labors, he died at a young 55, but as he had once said, he had put into each day as much as most people had put into two days, and therefore he had lived about 90 years.

At his death on July 22, 1927, his priceless collection of Philippine insects and his bibliographies of Indo-Malayan and Philippine entomology went to the U.S. National Museum. To the College he gave his library and his collection of shells, small herbarium, and botanical specimens. To his one-time student Leopoldo B. Uichanco, already a professor of entomology, he left all his field equipment,

⁷ "Dean Baker Turns in His Thesis," *The American Chamber of Commerce Journal* editorial, Aug. 1927. Reprinted in the *Philippine Agriculturist*, Special Number, 1927, pp. 78-79.

insect nets, tools, and bottled specimens. But his finest legacy was his spirit, which could not but have rubbed off on his former students and associates.



Charles Fuller Baker, second dean of the college,
September 27, 1917, to July 22, 1927.

THE COLLEGE ARRIVES

Bienvenido Maria Gonzalez succeeded as third dean of the College of Agriculture in August, 1927. His was not a popular appointment; the students and not a few of the faculty thought him too strict and demanding. Before his election as the first alumnus member of the U.P. Board of Regents in 1918, a circular described him as "a man who, after having determined in his own mind, by careful weighing of the factors, the desirability or the undesirability of a

project, does not fear to go toward getting it or defeating it with well-balanced and herculean energy.”⁸

The circular continued: “We know that he will weigh both sides of the question and choose the right one, and that he will let no exterior or ulterior motive serve him. We know that he will say what he thinks without camouflage.”⁹



Bienvenido Maria Gonzalez, third dean of the College, August, 1927, to April, 1939.

Born to a rich family at a time when agriculture was not fit profession for the rich, he nevertheless transferred to the College from the Philippine Normal School because his mettle was challenged

⁸ Editorial, *Philippine Agriculturist*, 7, 64 (1918).

⁹ *Ibid.*

when a barrio woman successfully raised some orphaned pigs that he himself had given up as a bad job. He graduated with a B.Agr. degree in 1913 and got his master's degree from the University of Wisconsin in 1915 and his doctorate from Johns Hopkins in 1923 as a university fellow while rising in the ranks from assistant to professor of animal husbandry in the College.

Research harvest

The College spread strong roots in the years 1927 to 1939 when Dean Gonzalez was at the head. "I want every product of this College, whether it be a student, a plant, a domestic animal, or a scientific paper, to bear a mark similar to that of 'sterling' on silver," he used to say.¹⁰

Scientific investigation was pushed to the limits of College personnel and facilities. Spade work on animal breeding, which had started in the last decade, culminated in the Berkjala swine, the Los Baños Cantonese chicken, and the Philamin beef-draft cattle, three celebrated College achievements in the breeding world. As former head of the Department of Animal Husbandry, Dr. Gonzalez had seen the futility of importing into the Philippines farm animals which were of standard breeds but which were not adapted to the climate and environment. He diverged from prevailing thought and set out to create new breeds by combining the good points of the standard imported breeds and the tropically suited native animals. Thus the Berkjala swine is a composite of the Berkshire and the native Jala-jala from Rizal; the Philamin cattle, of the Indian Nellore, the American Hereford, and the Philippine Native. The Los Baños Cantonese chicken, after years of selection, acquired such an excellent reputation that it began to be imported back to its native home, Canton, China. The Philamin cattle and the Los Baños Cantonese were almost wiped out in World War II; the years of purification and improvement have had to be retraced.

In the other technical departments similar long-range researches were in progress, as the experiments on feeds of animals, fertilizer needs of various plants on different soils, cost of producing livestock and plant products, improvement of farm practices and tools, finding new and better strains of field crops, fruits, and vegetables, nutrition problems of Filipinos, and control of plant pests and diseases. By this time, the reports of these pilot researches had come

¹⁰ L. B. Uichanco, *Philippine Agriculturist*, 28, 77 (1939).

to be expected by private farmers, industry, and government agencies. Most of them were threshed out at the meetings of the Los Baños Biological Club, an elastic group of scientists devoted to research, and were published in the *Philippine Agriculturist*, which was acknowledged to be the best collection of original investigations on Philippine agriculture.

Six-year course abolished

By 1929, the six-year course for intermediate school graduates had outlived its usefulness and was finally given up. The general curriculum was revamped to give the student 2½ years of the sciences basic to agriculture and subjects of broad agricultural application and 1½ years of specialization in one subject of his choice.¹¹ In the same year, the Rural High School was opened to serve chiefly as practice laboratory for students majoring in agricultural education. The Department of Agricultural Education had been created the year before to prepare teachers for lower agricultural schools.

In 1935, the animal husbandry-veterinary science course was abolished. The four-year general curriculum was revised in 1937 and a new two-year curriculum leading to the title of Associate in Agriculture was set up.¹²

Extension

The campus continued to be a popular place for excursions, conferences, scientific visits, institutes, farmer's days, and fairs. To their teaching and research duties, the faculty added the dissemination of agricultural knowledge through speaking engagements, consultations and interviews. A mimeographed *Biweekly Bulletin* took over from the College News Service the job of reporting experimental work that would be of practical value to the farmers and alumni and campus doings. Superior livestock and plant materials were distributed.

The physical plant

The College physical plant had expanded so rapidly that on the twentieth anniversary celebration on October 10, 1929, returning alumni had to revise their bearings. The College had grown around the first building, the "temporary building" of bamboo, wood, and

¹¹ See Appendix, pp. 33-34.

¹² See Appendix, p. 34.

corrugated iron which, as more classrooms and laboratories had gone up, had come to be known as the "old College building." The entrance to the campus from the Grove was now defined by a gate of carabao heads and a statue of a farmer close by, gifts of the U. P. Student Council. On the twentieth anniversary, more structures were inaugurated: the Agricultural Education Building, the Animal Husbandry Gate, the Experimental Station Bridge, and the Campus Bridge.

The old campus landmarks were going one by one. When the Big Bagtican Tree by the Campus Bridge which had watched the College weather its growing pains finally bowed out to the new, many an oldtimer felt the sharp nudge of change.

Silver Jubilee

The year 1934 was another gala year for the College. At the Loyalty Day festivities at which Hon. Claro M. Recto was guest speaker, every class was represented. Singled out for special mention were Basilio Hernandez, '22, most loyal alumnus; Toribio Vibar, '12, oldest alumnus in attendance; Francisco B. Santos, of Davao, '18, alumnus who traveled farthest; Francisco G. Galang, '14, alumnus who had contributed the most to the country's population; Evett D. Hester, most loyal faculty alumnus; and Paulino Santos, most loyal adopted alumnus.

Dr. Copeland was present at the twenty-fifth anniversary celebration, having come back to the Philippines in 1932 after an absence of 15 years. The College he returned to had 12 departments: agricultural chemistry, agricultural education, agricultural engineering, agronomy, animal husbandry, English, entomology, military science and tactics, plant pathology, plant physiology, rural economics, and soils. It had put out 948 experiment station contributions and 397 general contributions. Its technical journal was in its twenty-third volume and its *Biweekly Bulletin* in its second. Of cultivated and wild plants it had 1,514 species, 819 genera, and 153 families. Herds of cattle, swine, sheep, goats, and poultry stocked its barns. It had a student body of 426 and a faculty of about 50.

The alumni force

The services of the alumni and even of the faculty were sought by government and private organizations. As a result of the policies laid down at the outset, the deanship and all the technical positions

of the College were held by Filipinos, nearly all of whom were alumni. Aggies held key positions in the Bureaus of Plant Industry, Science, Education, Prisons, Animal Industry, Forestry, Non-Christian Tribes, Constabulary, Internal Revenue and Public Works, the Philippine Army, Fiber Inspection Service, Philippine National Bank, Fish and Game Administration, and the provincial and municipal governments. More had gone to the sugar centrals and to farming and ranching. Foreign alumni were proving themselves in Siam, British North Borneo, Sumatra, India, and Java.

The College leads

Leadership in science was no longer disputed. Of the 50 Filipinos in the 1933 *American Men of Science*, 23 were College alumni and four of the Americans were or had been on the faculty. No less than the Commonwealth president, who saw in the College a powerful ally in his economic program, commended its achievements in research and scholarship. The Government Survey Board proposed to concentrate basic agricultural research in a National Experiment Station to be administered by the College. There was even talk of moving the whole university to Los Baños because of its "wholesome atmosphere conducive to scholarship."¹³

Gonzalez elected U. P. President

Clearly impressed by the management of the College, President Quezon was making several surprise visits to the campus. His purpose became apparent on April 20, 1939, when at a special meeting of the Board of Regents presided over by President Quezon himself, Bienvenido M. Gonzalez was elected president of the University of the Philippines. He was the first scientist and the first alumnus of the university to be president.

Thus the third dean of the College moved on to pursue public service further in the wider confines of the university. The talent for organization and administration, which had built up such institutions as the College Cooperative Store, the Maquilang School, and the Los Baños Biological Club and which had nurtured the Department of Animal Husbandry and the College itself, would now be turned to the creation of a greater university.

To the Board of Regents he confessed: "In my own humble way, silently but unceasingly, for the last 20 years, I have been reading,

¹³ B. M. Gonzalez, *Philippine Agriculturist*, 26, 307 (1938).

studying, preparing for the position of President. Not that I knew I was going to be offered it but because I felt it the duty of every faculty member to prepare himself for the time when the call for a higher service may be made.”¹⁴

The upright man who lived by principle, uncompromising to the point of stubbornness, whom many were not sure would make a good dean, became one of the strongest presidents of the University.

DESTRUCTION AND REHABILITATION

A week after Dean Gonzalez was elected president, Leopoldo B. Uichanco was appointed his successor. Likewise a student of Cope land and Baker, he went to Harvard for his advanced degrees and became the most outstanding entomologist of the country. To him fell the difficult lot of seeing the labor of three decades go up in smoke and of building anew from the wreckage.

The occupation

Barely two years after Dean Uichanco had assumed office, on the town fiesta of Los Baños, war came to the Philippines. It reached the campus on Christmas Day when three Japanese planes bombed Molawin Mess Hall. Fortunately, the remaining students were at Baker Memorial Hall attending a program where the talk had turned into “a long, drawn-out sermon.”¹⁵

The College was not formally permitted to reopen until September, 1942. At about the same time, it was declared a recuperative camp for Filipino war prisoners and, simultaneously after that, was an internment camp for Allied nationals, headquarters for the Japanese Army, and home base for a guerilla unit, the Home Guards, until the end of the year.

Badgered by the Japanese troops and their Filipino collaborators on one hand and by guerrillas on the other, the College simulated cooperation with the new order while secretly doing what it could for the prisoners of war and always, at daring costs, trying to keep itself intact. Under these uneasy terms, it remained open during the war years. At one point Dean Uichanco was imprisoned and sentenced to death on charges of hiding Americans and firearms

¹⁴ L. B. Uichanco, *op. cit.*, p. 78.

¹⁵ L. B. Uichanco, Annual report of the College of Agriculture for the academic year ending June 4, 1946, p. 2.

and maintaining guerrillas. He was pardoned through the intercession of high Filipino officials in the occupation government but was dismissed from the service. When the College again opened in September, 1943, Dr. Francisco O. Santos was designated dean.



Leopoldo Bancain Uichanco, present dean of the College. Of the four deans he has served the longest.

It was a time of fear, insecurity, and fits of violence. The tension, the demoralized faculty, and the drying up of supplies and materials naturally damaged teaching and research. The *Philippine Agriculturist* ceased publication. Faced with the immediacy of survival, Japanese and Filipinos alike stole scientific animals and raided experimental orchards and fields for food and fuel. Campus families taught their children to don food packs and run to the hills at guerrilla alerts.

Towards 1944 American plane visits became more frequent. Matters came to a head on the morning of February 23, 1945, when the College boys turned guerrillas and other allied units surrounded the internment camp until the Eleventh Airborne paratroopers and the First Cavalry Division liberated it. Three days later when the American troops pulled out, the Japanese came back. They demolished in two days what had taken 36 years to build.

Reconstruction begins

On April 4, 1945, Dean Uichanco and Dr. Gerardo Ocfemia picked their way through the campus ruins to take stock. They were appalled at what they saw. Roads and bridges gaped with holes, buildings were gutted, the smell and the debris of war were everywhere. Gone were the precious collections of agricultural crops, botanical and zoological specimens, insects, plant diseases, and soils. Of the herds only a few strays remained. Nearly all scientific equipment, tools, and machinery were either burned or looted. Of the 20,000 volumes, 6,000 pamphlets, and other publications in the Library, only 180 books and assorted pamphlets were saved. There were no longer any administration and student records or lecture and laboratory notes.

Dean Uichanco and the staff he had managed to recall set about the salvaging task. On July 25, 1945, the College reopened, the first university unit to do so. It had a faculty of 19, an enrollment of 119, three available buildings, and pieces of odds and ends. As in the pioneer days teaching went hand in hand with construction. Rehabilitation was begun with the trickle of money from the University, help from the U. S. Army which had used the campus as recreation center and headquarters, and donations of specimens and literature from sister institutions and private and commercial sources.

The four-year curriculum was revised,¹⁶ the faculty line-up refurbished, promising staff members sent for advanced training abroad, students graduated. From 1942 to 1946, 151 students received the BSA degree, seven of them posthumously, having been killed in the line of duty. The first *summa cum laude*, Obdulia Fronda Sison, was graduated in May, 1946. Fresh faces appeared on the campus and new names were heard. Loyalty Day was again celebrated with a deeper meaning. The Society for the Advancement of Research and the Los Baños Biological Club were reactivated.

¹⁶ See Appendix, p. 35.

The *Philippine Agriculturist* and the *Biweekly Bulletin* resumed publication.

Los Baños spirit heightened

Never was the student body more active. Quartered in converted poultry houses and taught in patched-up classrooms, the generation of young people who had grown up during the war released their extra-curricular talents in the Dramatics Club, Ranchers' Club, Mimes Mummers Scribblers Fraternity, *Aggie Green and Gold*, and other campus ventures. The faculty which had been cut off from the rest of the scientific world renewed their contact with foreign colleagues. They again picked up their teaching, research, extension, and community assignments and resumed service on scientific and civic organizations.

The old alumni spirit again manifested itself and brought back Dr. Copeland from California so that he could be granted the honorary degree of Doctor of Laws on the fortieth year of the College. Two of his old students participated in the honoring ceremonies. President Bienvenido M. Gonzalez read the citation and conferred the diploma; Dean Leopoldo B. Uichanco invested him with the doctor's hood.

American aid

War damage funds pushed on the repair of buildings and the re-accumulation of laboratory equipment, supplies, tools, breeding animals, and scientific literature. Five years after the war, 80 per cent of the physical plant, excluding the collections and the library, had been restored. At this juncture other forces stepped in. The American Agricultural Mission headed by Dr. Leland Everett Call had pointed out in 1946 the potentialities of the College and had strongly urged support for the experiment station. It was the Economic Survey Mission to the Philippines that made the clinching recommendation in 1950.

The PHILCUSA-ECA program set up on the advice of the Bell Mission had two main goals: to fortify the College so that it could produce enough competent young men and women for the agricultural needs of the country and to strengthen and invigorate the experiment station. These goals called for material aid, a contract of technical assistance with Cornell University, and the establish-

ment in the College of the Central Experiment Station which would coordinate all Philippine agricultural research.

Enrollment climbs

The College now entered a period of expansion beginning in late 1952 when the aid goods started to pour in. Seemingly overnight, buildings went up, laboratories filled with equipment and supplies, the staff doubled. Attracted perhaps by the improved facilities or by the emphasis placed on agriculture in the national scheme, students flocked to the College. The enrollment rose from 315 in 1946 to over 4,000 in 1955. The faculty-student ratio correspondingly jumped from 8:1 to 16:1 to the impossibly high 22:1. The housing problem became acute, and in the classrooms students stood outside the windows because there was no more room inside. While the College had never had so much in physical resources and manpower, it found itself in the paradoxical position of asking urgently for more.

Curriculums revamped

Selective entrance requirements have since steadied the enrollment to the 2500-3000 range aimed at, if the College is to graduate at least 250 students a year. The students may pick from eight different curriculums: general, honors, agricultural education, extension option, short course in agricultural education, home technology, sugar technology type A, and sugar technology type B.¹⁷

The Central Experiment Station

The Central Experiment Station is at last a fact. Staffed by experienced scientists and apprentice research fellows and research assistants, it probes into the basic sciences and seeks their application for the benefit of rural people. Some of its notable projects in applied research are breeding superior animals through artificial insemination, finding better varieties of rice, corn, vegetables, and coffee, determining fertilizer needs of crops under different soil and climatic conditions, looking for the control of pests and diseases of cultivated plants and domestic animals, developing improved feeds for livestock and poultry, adapting small tools for the farm and home, answering questions relating to farm tenancy, marketing and distribution, irrigation and drainage, and utilizing agricultural products and by-products for industry.

¹⁷ See Appendix, pp. 36-46.

Characteristic of these researches at the College today is the close cooperation with the bureaus of the Department of Agriculture and Natural Resources and other government and private agencies.

Extension reorganized

College extension activities have been stepped up with the creation of the Office of Extension and Publications and the curriculum for training extension workers. The College spreads agricultural information through the mass media and holds field days, lectures, and seminars and in-service training schools in cooperation with the Bureau of Agricultural Extension and other agencies.

The Cornell contract

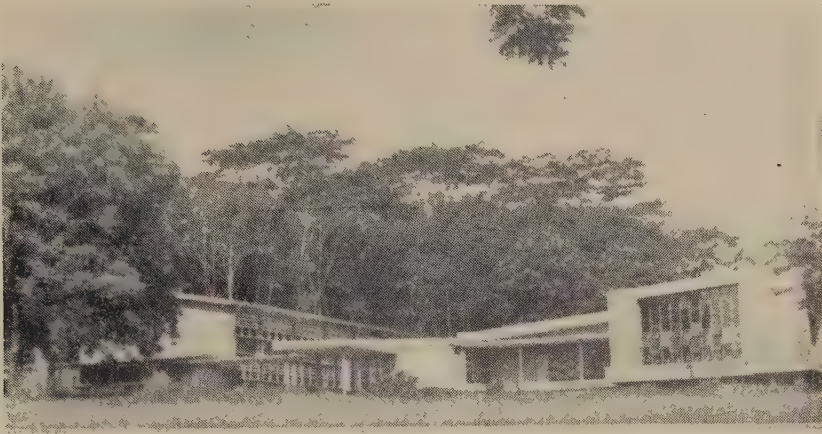
The contract with Cornell University signed on July 1, 1952, was renewed on June 24, 1954, and again on July 1, 1957, to last until June 30, 1960. It is considered the most successful of its kind in the American foreign aid program. The American professors detailed to the College under that contract have helped revitalize research and have infused new ideas in instruction. They and their families are respected and active members of the Los Baños community.

Training center for Southeast Asia

The College is becoming a training center in technical agriculture for Southeast Asia, and in recognition of this Rockefeller Foundation has financed an International House to serve as a meeting ground for foreign and Filipino students. About fifty students from Vietnam, Indonesia, United States, Laos, Burma, Thailand, China, Ceylon, and Micronesia are in the College mostly on ICA and Rockefeller Foundation scholarships. The first agricultural extension center for Southeast Asia was held on the campus in the summer of 1958.

Public approval

Public confidence is reflected in the close to two million pesos in grants-in-aid that the College has received from Rockefeller Foundation, Council of Economic and Cultural Affairs of New York, PACD, NARIC, Central Cooperative Exchange, Victorias Milling Co., Committee for Free Asia, Mathieson Chemical Corporation-Menzi, Albatros Company-Holland, Samaka Service Center, and others. In 1953 it was chosen the "Agricultural College of the Year" by the Business Writers Association of the Philippines.



The International House financed by the Rockefeller Foundation will serve as a meeting ground for foreign and Filipino students.

Restatement

The ideals conceived by the founders of the College of Agriculture have withstood 50 years of testing and remain valid.

The College is more than a farm school dispensing methods and techniques of agriculture. It goes beyond to teach the principles underlying these methods and techniques and, even further, to educate the agriculturist to fit into his society. To freshen instruction and upgrade Philippine agriculture, the College operates the Central Experiment Station. Emphasis is not on production but on experimentation. From its fields and laboratories test results are picked up by government and industry for development and eventual spread to the farthest barrio. Thus its two chief products are still its graduates and the research results from its laboratories. Both products are constantly changing the shape of the country's economy.

On its golden jubilee the College of Agriculture stands a forward-looking community leavened by a strong tradition of scholarship and research and committed to the cause of scientific agriculture.

APPENDIX

THE ORIGINAL SIX-YEAR COURSE OF STUDY IN AGRICULTURE

FIRST YEAR	SECOND YEAR	THIRD YEAR
English I	English II	Chemistry I
Mathematics I	Mathematics II	Mathematics III
German I	German II	Zoology I
Botany I	Botany II	Agronomy I
FOURTH YEAR	FIFTH YEAR	SIXTH YEAR
Chemistry II	Elective ^a	Elective ^a
Farm Engineering	Physics	Elective ^a
Zoology II	Animal Husbandry	Elective ^a
Agronomy II	Agronomy III	Agronomy IV (Thesis)

^a "There are offered as electives two additional years in Chemistry, one each in farm engineering, animal husbandry, and botany, two years in Spanish, and any of the courses described in the general course in forestry."

THE FOUR-YEAR COURSE, 1910

FIRST YEAR	SECOND YEAR	THIRD YEAR	FOURTH YEAR
Botany II	Agronomy I	Agronomy II	Agronomy IV or V
German I	German II	Rural Engin. I	Elective
Chemistry I	Chemistry II	Agronomy III	Elective
Zoology I	Zoology II	Animal Husb. I	Thesis

THE COLLEGE OF AGRICULTURE GENERAL COURSE, 1929

FIRST YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Math. 1	3	3	Entom. 1	9	5
Agron. 1	6	2	Agron. 1	6	2
Agron. 2	5	5	Anim. Husb. 1	3	3
Rural Econ. 1	2	2	Rural Econ. 1	2	2
Agric. Chem. 1	9	5	Agric. Chem. 1	9	5
Zool. 1	9	5	Physics 1	7	5
		22			22

SUMMER

Farm Experience: A—Summer Farm Practice
 B—Blacksmithing or
 H—Household Engineering
 C—Carpentry

SECOND YEAR

Agric. Chem. 2	9	5	Plant Path. 1	9	5
Anim. Husb. 2	6	2	Anim. Husb. 2	6	2
Plant Physiol. 1	9	5	Plant Physiol. 1	9	5
Agron. 3	9	5	Agron. 5	5	5
English 1	5	5	English 1	5	5
		22			22

THIRD YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Engin. 1	5	5	Agric. Engin. 2	5	3
Plant Physiol. 2 or	(9)	(5)	Agric. Engin. 3	5	3
Agric. Chem. 3	9	5	Rural Econ. 2 ^a	3	3
Rural Econ. 2 ^a	3	3	Prescribed Elective		5
Prescribed Elective		5	Major		5
Major		3			
					19
		19			

^a To be prescribed by the head of the department under whom the student is majoring.

FOURTH YEAR

Major	11	Major	11
Prescribed Elective ^a	3	Prescribed Elective ^a	3
Free Elective	5	Free Elective	5
	19		19

^a To be prescribed by the head of the department under whom the student is majoring.

THE COLLEGE OF AGRICULTURE GENERAL COURSE (LONG COURSE), 1937

The College of Agriculture General Course leads to the degree of Bachelor of Science in Agriculture and consists of a four-year schedule of collegiate work. The course is open to students who have completed the following subjects in a recognized secondary school:

<i>Subjects</i>	<i>H.S. Units</i>	<i>Subjects</i>	<i>H.S. Units</i>
Algebra	1½	Physics	1
Biology, botany or zoology	1	Plane Geometry	1
Electives	4½	English	5
History	2		
		Total	16

FIRST YEAR

<i>First Semester</i>	<i>Units</i>	<i>Second Semester</i>	<i>Units</i>
Animal Husbandry 1	2	Animal Husbandry 1	2
Agricultural Economics 1	2	Agricultural Economics 1	2
Agronomy 1	3	Agronomy 1	3
Agricultural Chemistry 1a	5	Agricultural Chemistry 1b	5
Mathematics 1	3	Soils 1	3
Agricultural Botany 1	5	Agricultural Botany 1	5
Military Science 1	1½	Military Science 1	1½
Physical Education 1 & 2	2	Physical Education 1 & 2	2
	23½		23½

SECOND YEAR

	<i>Units</i>		<i>Units</i>
Animal Husbandry 2	2	Animal Husbandry 2	2
Agronomy 2	5	Agronomy 2	5
Zoology 1	5	Agricultural Chemistry 2	5
English 1a	3	English 1b	3
Plant Pathology 1	5	Physics 1	5
Military Science 2	1½	Military Science 2	1½
Physical Education 3	1	Physical Education 3	1
	22½		22½

THIRD YEAR

	<i>Units</i>		<i>Units</i>
Agricultural Engineering 1a	3	Agricultural Engineering 1b	3
Agricultural Economics 2	3	Agricultural Economics 2	3
Agricultural Botany 2 or	5	Agricultural Education 1	3
Agricultural Chemistry 15		Major	7
Entomology 1	5	Prescribed Elective ^a	3
Agricultural Engineering 3	3	Physical Education 4	1
Physical Education 4	1		
	20		20

FOURTH YEAR

	<i>Units</i>		<i>Units</i>
English 10	3	Prescribed Elective	5
Free Elective	6	Free Elective	6
Major	10	Major	8
	19		19

THE COLLEGE OF AGRICULTURE TWO-YEAR COURSE (MIDDLE COURSE), 1937

The College of Agriculture two-year course leads to the title of Associate in Agriculture. The entrance requirements to this course are the same as those of the long course.

FIRST YEAR

<i>First Semester</i>	<i>Units</i>	<i>Second Semester</i>	<i>Units</i>
Animal Husbandry 1	2	Animal Husbandry 1	2
Agricultural Economics 1	2	Agricultural Economics 1	2
Agronomy 1	3	Agronomy 1	3
Agricultural Chemistry 1a	5	Agricultural Chemistry 1b	5
Mathematics 1	3	Soils 1	3
Agricultural Botany 1	5	Agricultural Botany 1	5
Military Science 1	1½	Military Science 1	1½
Physical Education 1 & 2	2	Physical Education 1 & 2	2
	23½		23½

SECOND YEAR

	<i>Units</i>		<i>Units</i>
Animal Husbandry 2 ^a	2	Animal Husbandry 2 ^a	2
Agronomy 2	5	Agronomy 2	5
Animal Husbandry Elective	5	Animal Husbandry Elective	5
Agronomy Elective	5	Agronomy Elective	5
Free Elective	3	Free Elective	3
Military Science 2	1½	Military Science 2	1½
Physical Education 3	1	Physical Education 3	1
	22½		22½

^a Students desiring to give emphasis to animal husbandry in their work should take Animal Husbandry 3 and 7, in lieu of Animal Husbandry 2.

THE GENERAL COURSE, 1948

The general course leads to the degree of Bachelor of Science in Agriculture and consists of a four-year schedule of collegiate work.

The schedule consists of 191 week hours carrying 146 units and is arranged as follows:

FIRST YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Chem. 1a	9	5	Zool. 1	9	5
Agric. Bot. 1a	9	5	Physics	9	5
Agron. 1	5	3	Agron. 2a	7	3
Math. 1	3	3	Agric. Bot. 1b	7	3
Anim. Husb. 1	3	3	Anim. Husb. 2a	7	3
Physical Education 1a	(1)	(1)	Physical Education 1b	(1)	(1)
Physical Education 2a	(1)	(1)	Physical Education 2b	(1)	(1)
Military Science 1a	(3)	(1.5)	Military Science 1b	(3)	(1.5)
Totals	29	19	Totals	39	19

SECOND YEAR

Agron. 2b	7	3	Agron. 2c	7	3
English 1a	3	3	English 1b	3	3
Agric. Chem. 1b	5	3	Agric. Chem. 2a	7	3
Soils 1	5	3	Anim. Husb. 2b	5	3
Agric. Ed. 3	3	3	Plant Path. 10	7	3
Agric. Econ. 1	7	3	Agric. Eng'g 1a	5	3
Physical Education 3a	(1)	(1)	Physical Education 3b	(1)	(1)
Physical Education 4a	(1)	(1)	Physical Education 4b	(1)	(1)
Military Science 2a	(3)	(1.5)	Military Science 2b	(3)	(1.5)
Totals	30	18	Totals	34	18

THIRD YEAR

Agric. Eng'g 1b	5	3	Agric. Eng'g 3	5	3
Agric. Econ. 2a	3	3	Agric. Econ. 2b	3	3
Entom. 11	5	3	Major ^a		6
Agric. Bot. 13	5	3	Minor ^b		6
Plant Path. 11	7	3			
Agric. Chem. 2b	7	3	Totals	8	18
Totals	32	18			

^a Major subjects to be taken entirely or largely in the department where the student majors. Of the major units, 6 are for thesis.

^b Minor subjects to be taken in one, but not in more than two departments other than the major.

FOURTH YEAR

English 10	3	3	Agric. Econ. 9	5	3
Major ^a		9	Agric. Educ. 5	3	3
Minor ^b		3	Major ^a		6
Elective ^c	3	3	Minor ^b		3
			Elective ^c	3	3
Totals	—	18	Totals	11	18

^a Major subjects to be taken entirely or largely in the department where the student majors. Of the major units, 6 are for thesis.

^b Minor subjects to be taken in one, but not in more than two departments other than the major.

^c Any from the following: Psychology, Eugenics and Euthenics, Public Speaking, World Literature, Extension Teaching, Languages.

THE SUGAR TECHNOLOGY CURRICULUM
(Type "A")

Leading to the degree of Bachelor of Science in Sugar Technology
(Sugar Chemistry Major)

(Based on the completion of the Common First Year of the College of Agriculture Curricula, with an average grade of 2.5 or better.)

FIRST YEAR (Common in all curricula)

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Bot. 1, Gen. Botany	6	4	Agric. Chem. 1b, Org. Chemistry	6	4
Agric. Chem. 1a, Gen. Chemistry	6	4	Agron. 3, Field Crops	5	3
Agron. 2, Peren. and Ind. Crops	5	3	Anim. Husb. 2, Livestock Selection and Management	5	3
Anim. Husb. 1, Fundamentals of Animal Husbandry	3	3	English 2, College Composition ..	2	2
English 1, College Composition	2	2	Math. 3, Plane Trigonometry ..	3	3
Math. 2, College Algebra	3	3	Zool. 1, Introductory Zoology ..	6	4
Phys. Ed. 1a, Hygiene	(1)	(1)	Phys. Ed. 1b, Hygiene	(1)	(1)
Phys. Ed. 2a, Phys. Education ..	(1)	(1)	Phys. Ed. 2b, Phys. Education ..	(1)	(1)
Mil. Sc. 1, Basic Course	(3)	(1.5)	Mil. Sc. 2, Basic Course	(3)	(1.5)
Euth. 1, Good Grooming and the Social Graces ^a	(1)	(1)	Euth. 2, Personality Development	(1)	(1)
	25	19		27	19

SUMMER SESSION
(6 weeks)

	<i>Hours</i>	<i>Units</i>
Ag Engin 14, Mechanical Drawing	15	3
Math 8, Analytic Geometry	7.5	3
	22.5	6

SECOND YEAR

Agric. Chem. 2a, Qual. Chemical Analysis	7	3	Agric. Bact. 10, Agric. Bact. ..	5	3
Math. 10, Calculus 1	3	3	Agric. Chem. 2b, Quant. Methods of Analysis	7	3
Physics 21, Mechanics and Heat	5	3	Agric. Engin. 11, Internal Combustion Engines	5	3
Soils 1, Principles of Soil Science	5	3	Math. 11, Calculus 11	3	3
Spanish 10, Elem. Spanish	3	3	Physics 22, Elec. and Magnetism	5	3
Statistics 11, Stat. Methods 1 ..	5	3	Spanish 11, Elem. Spanish ...	3	3
Phys. Ed. 3a, Phys. Education ..	(1)	(1)	Phys. Ed. 3b, Phys. Education ..	(1)	(1)
Phys. Ed. 4a, Phys. Education ..	(1)	(1)	Phys. Ed. 4b, Phys. Education ..	(1)	(1)
Mil. Sc. 2, Basic Course	(3)	(1.5)	Mil. Sc. 2, Basic Course	(3)	(1.5)
Euth. 3, Foods and Nutrition ..	(1)	(1)	Euth. 4, Boy-Girl Relationship ..	(1)	(1)
	28	18		28	18

^a Euthenics courses are required of all female students.

THIRD YEAR

Agric. Chem. 3, Inter. Organic Chemistry	5	3	Agric. Chem. 4b, Phys. Chemistry	5	3
Agric. Chem. 4a, Phys. Chemistry	3	3	Agric. Chem. 114, Fertilizers and their reaction with the soil ..	3	3
Agric. Engin. 12, Farm Machinery and Motors	5	3	Agron. 22, Sugar Cane	5	3
Sugar Tech. 3, Thermodynamics	5	3	Spanish 13, Inter. Spanish	3	3
Sugar Tech. 11, Principles of Chemical Engineering	3	3	Sugar Tech. 12, Unit Operations Fluid Flow	5	3
Spanish 12, Inter. Spanish	3	3	Sugar Tech. 13, Heat Engin. ..	5	3
Euth. 5, Art Appreciation	(1)	(1)	Euth. 6, Socio-Civic Training ..	(1)	(1)
	24	18		26	18

FOURTH YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Chem. 32 (ST-2) Tech. Sugar Analysis	9	5	Agric. Chem. 55 (ST-4), Sugar House Practice "A"	30+	12
Agric. Chem. 15, Ind. Chemistry	7	3	Agric. Chem. 151, Sugar Chemistry	5	3
Agric. Chem. 122, Anal. of Soils, Fertilizers and Insecticides ..	7	3	Agric. Econ. 2, Gen. Economics	3	3
Agric. Chem. 123, Instrumental Methods of Analysis	7	3	Euth. 8, Family Living	(1)	(1)
Agric. Ed. 31, Rural Sociol. and Rural Education	3	3		38	18
Euth. 7, Child Care and Home Nursing	(1)	(1)			
	33	17			

FIFTH YEAR

Agric. Chem. 35, Sugar By-Products	5	3	Sugar Tech. 25 (ST-7) Sugar House Practice "B" (One whole) Milling season in an approved Sugar Factory	18
Agric. Chem. 130, Biochemistry	3	3		18
Agric. Chem. 132, Org. Analysis	7	3		
English 3, College Composition	3	3		
Sugar Tech. 16 (ST-5) Factory Management	7	3		
Sugar Tech. 20 (ST-6) Plant Design 7	7	3		
	32	18		

THE SUGAR TECHNOLOGY CURRICULUM
(Type "B")

Leading to the degree of Bachelor of Science in Sugar Technology
(Sugar Engineering Major)

(Based on the completion of the Common First Year of the College of Agriculture curricula, with an average grade of 2.5 or better.)

FIRST YEAR (Common in all curricula)

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Bot. 1, General Botany ..	6	4	Agric. Chem. 1b, Org. Chem. ..	6	4
Agric. Chem. 1a, Gen. Chem. ..	6	4	Agron. 3, Field Crops	5	3
Agron. 2, Perennial and Indust. Crops	5	3	Anim. Husb. 2, Livestock Selection and Management	5	2
Anim. Husb. 1, Fund. of Animal Husbandry	3	3	English 2, College Composition ..	2	2
English 1, College Composition ..	2	2	Math. 3, Plane Trigonometry ..	3	3
Math. 2, College Algebra	3	3	Zool. 1, Introductory Zoology ..	6	4
Phys. Educ. 1a, Hygiene	(1)	(1)	Phys. Ed. 1b, Hygiene	(1)	(1)
Phys. Educ. 2a, Phys. Education	(1)	(1)	Phys. Ed. 2b, Phys. Education ..	(1)	(1)
Mil. Sc. 11, Basic Course	(3)	(1.5)	Mil. Sc. 12, Basic Course	(3)	(1.5)
Euth. 1, Good Grooming and the Social Graces *	(1)	(1)	Euth. 2, Personality Development	(1)	(1)
	25	19		27	19

* Euthenics courses are required of all female students.

SUMMER SESSION
(6 weeks)

	<i>Hours</i>	<i>Units</i>
Ag. Engin. 14, Mechanical Drawing	15	3
Math. 8, Analytic Geometry	7.5	3
	22.5	6

SECOND YEAR

Agric. Chem. 2a, Qual. Chem. Analysis	7	3	Agric. Bact. 10, Agric. Bact. ..	5	3
Math. 10, Calculus 1	3	3	Agric. Chem. 2b, Quant. Meth. of Analysis	7	3
Physics 21, Mech. and Heat ..	5	3	Agric. Engin. 11, Internal Combustion Engines	5	3
Soils 1, Prin. of Soil Sc.	5	3	Math. 11, Calculus II	3	3
Spanish 10, Elem. Spanish	3	3	Physics 22, Elect. and Magnt.	5	3
Statistics 11, Stat. Meth. 1 ...	5	3	Spanish 11, Elem. Spanish	3	3
Phys. Educ. 3a, Phys. Education (1)	(1)	(1)	Phys. Educ. 3b, Phys. Education (1)	(1)	(1)
Phys. Educ. 4a, Phys. Education (1)	(1)	(1)	Phys. Educ. 4b, Phys. Education (1)	(1)	(1)
Mil. Sc. 21, Basic Course	(3)	(1.5)	Mil. Sc. 22, Basic Course	(3)	(1.5)
Euth. 3, Foods and Nutrition ..	(1)	(1)	Euth. 4, Boy-Girl Relationship ..	(1)	(1)
	28	18		28	18

THIRD YEAR

Agric. Chem. 4a, Phys. Chem. ..	3	3	Agric. Chem. 4b, Phys. Chem. ..	5	3
Agric. Engin. 12, Farm Machinery and Motors	5	3	Agric. Engin. 13, Irrigation and Drainage	5	3
Physics 23, Wave Phenomena and Electronics	5	3	Agric. Engin. 24, Descriptive Geometry	7	3
Sugar Tech. 11, Principles of Chemical Engineering	3	3	Spanish 13, Inter. Spanish	3	3
Spanish 12, Inter. Spanish ..	3	3	Sugar Tech. 12, Unit Operations Fluid Flow	5	3
Sugar Tech. 3, Thermodynamics	5	3	Sugar Tech. 13, Heat Engin. ..	5	3
Euth. 5, Art Appreciation	(1)	(1)	Euth. 6, Socio-Civic Training ..	(1)	(1)
	24	18		30	18

SUMMER SESSION

	<i>Hours</i>	<i>Units</i>
Ag. Engin. 20, Tractors and Tillage Machinery	25	3
Ag. Engin. 25, Statistics	15	3
	40	6

FOURTH YEAR

Agric. Chem. 15, Ind. Chem. ..	7	3	Agric. Chem. 55 (ST-4) Sugar House Practice "A"	30+	12
Agric. Chem. 32 (ST-2), Tech. Sugar Analysis	9	5	Agric. Econ. 2, Gen. Economics	3	3
Agric. Chem. 123, Instrumental Methods of Analysis	7	3	Agric. Engin. 26, Elementary Electrical Engineering	5	3
Agric. Ed. 31, Rural Sociology and Rural Education	3	3	Euth. 8, Family Living	(1)	(1)
Agric. Engin. 27, Strength of Materials	5	3		38	18
Sugar Tech. 14, Heat and Material Balances	5	3			
Euth. 7, Child Care and Home Nursing	(1)	(1)			
	32	18			

FIFTH YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Chem. 35, Sugar By-Products	5	3	Sugar Tech. 25 (ST-7), Sugar House Practice "B" (one whole milling season in an approved Sugar Factory		18
English 3, College Composition ..	3	3			
Sugar Tech. 16 (ST-5) Factory Management	7	3			18
Sugar Tech. 20 (ST-6) Plant Design	7	3			
Sugar Tech. 15, Steam Engineering	3	3			
Engineering Elective ^b	—	3			
	25	18			

^b To be prescribed by the Head, Department of Agricultural Chemistry.

THE COLLEGE OF AGRICULTURE HOME TECHNOLOGY CURRICULUM ^a

Leading to the degree of Bachelor of Science in Home Technology

FIRST YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Bot. 1, General Botany ..	6	4	Agric. Chem. 1b, Org. Chem. ..	6	4
Agric. Chem. 1a, Gen. Chem. ..	6	4	Agric. Ed. 41, Introd. to Educ.	3	3
Agric. Ed. 21, Elem. Psychology	3	3	Anim. Husb. 12, Judging, Feeding & Mgt. of Livestock	5	3
Agron. 4, Horticultural Crops ..	5	3	English 2, College Composition ..	2	2
Math. 2, College Algebra	3	3	Math. 3, Plane Trigonometry ..	3	3
English 1, College Composition ..	2	2	Zool. 1, Introductory Zoology ..	6	4
Euth. 1, Good Grooming and the Social Graces	(1)	(1)	Euth. 2, Personality Development	(1)	(1)
Phys. Ed. 11a, Hygiene	(1)	(1)	Phys. Ed. 11b, Hygiene	(1)	(1)
Phys. Ed. 12a, Phys. Education	(1)	(1)	Phys. Ed. 12b, Phys. Education	(1)	(1)
	25	19		25	19

SECOND YEAR

Agric. Ed. 31, Rural Sociology and Rural Education	3	3	Agric. Bact. 10, Agric. Bact. ..	5	3
English 3, College Composition	3	3	Agric. Chem. 2a, Qual. Chem. Analysis or	(7)	(3)
Home Tech. 11, Food Selection and Preparation	5	3	Agric. Ed. 25, Educ. Psychology	3	3
Pest Control 1, Household and Garden Pests	5	3	Agron. 21, Floriculture & Landscape Gardening	5	3
Physics 11, Gen. Physics	5	3	Home Tech. 12, Nutrition & Dietetics	5	3
Poultry Husb. 11, Principles of Poultry Raising	5	3	Home Tech. 21, Clothing & Textiles	5	3
Euth. 3-HT, Household Equipment & Work Simplification ..	(1)	(1)	Home Tech. 41, Hygiene	3	3
Phys. Ed. 13a, Phys. Education	(1)	(1)	Euth. 4, Boy-Girl Relationship ..	(1)	(1)
Phys. Ed. 14a, Phys. Education	(1)	(1)	Phys. Ed. 13b, Phys. Education	(1)	(1)
	25	18	Phys. Ed. 14b, Phys. Education	(1)	(1)
				26	18

^a Revised as of December 17, 1958.

THIRD YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Chem. 2b, Quan. Methods of Analysis or	(7)	(3)	Agric. Engin. 21, Household Equipment	7	3
Agric. Ed. 51, Prin. of Teach.	3	3	Agric. Econ. 2, Gen. Economics	3	3
English 4, Lit. in English	3	3	Home Tech. 24, Needlecraft ..	6	2
Home Tech. 13, Food Preservation	7	3	Spanish 11, Elem. Spanish	3	3
Home Tech. 22, Clothing Construction	6	2	Major	—	6
Home Tech. 25, Handicraft	6	2	Euth. 6, Socio-Civic Training ..	(1)	(1)
Home Tech. 43, Home Nursing and Child Care	5	3		19+	17
Spanish 10, Elem. Spanish	3	3			
Euth. 5-HT, The Art of Being a Gracious and Successful Hostess	(1)	(1)			
	30	19			

FOURTH YEAR

Agric. Econ. 11, Econ. for Home Tech.	3	3	Home Tech. 31, Home Mgt. ..	2	3
Home Tech. 32, Marriage and Family Relations	3	3	Home Tech. 33, Home Furnishing and Decoration	5	3
Spanish 12, Inter. Spanish ..	3	3	Home Tech. 34, Prin. of Child Guidance	3	3
Major	—	6	Spanish 13, Inter. Spanish	3	3
Elective	—	3	Major	—	6
Euth. 7-HT, How to Look for a Job and Keep it	(1)	(1)	Euth. 8, Family Living	(1)	(1)
	9+	18		13+	18

THE COLLEGE OF AGRICULTURE HONORS CURRICULUM

Leading to the degree of Bachelor of Science in Agriculture
(Limited to students with an average grade of "2.5" or better)

FIRST YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Bot. 1, General Botany ..	6	4	Agric. Chem. 1b, Org. Chem. ..	6	4
Agric. Chem. 1a, Gen. Chem. ..	6	4	Agron. 3, Field Crops	5	3
Agron. 2, Perennial and Indust. Crops	5	3	Anim. Husb. 2, Livestock Selection and Management	5	3
Anim. Husb. 1, Fund. of Animal Husbandry	3	3	English 2, College Composition ..	2	2
English 1, College Composition ..	2	2	Math. 3, Plane Trigonometry ..	3	3
Math. 2, College Algebra	3	3	Zool. 1, Introductory Zoology ..	6	4
Phys. Educ. 1a, Hygiene	(1)	(1)	Phys. Ed. 1b, Hygiene	(1)	(1)
Phys. Educ. 2a, Phys. Education	(1)	(1)	Phys. Educ. 2b, Phys. Education	(1)	(1)
Euth. 1, Good Grooming and the Social Graces ^a	(1)	(1)	Euth. 2, Personality Development	(1)	(1)
				27	19

^a Euthenics courses are required of all female students.

SECOND YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Ed. 31, Rural Sociology and Rural Education	3	3	Agric. Bact. 10, Agric. Bact. ..	5	3
Entom. 11, Introd. Econ. Entom. ..	5	3	Agric. Bot. 2, Plant Physiology ..	5	3
English 3, College Composition ..	3	3	Agric. Econ. 2, Gen. Economics ..	3	3
Physics 11, Gen. Physics	5	3	Agric. Engin. 11, Internal Combustion Engines	5	3
Poultry Hus. 11, Prin. of Poultry Raising	5	3	Agron. 4, Horticultural Crops ..	5	3
Soils 1, Prin. of Soil Science ..	5	3	Physics 12, General Physics	5	3
Phys. Educ. 3a, Phys. Education (1)	(1)	(1)	Phys. Educ. 3b, Phys. Education (1)	(1)	(1)
Phys. Educ. 4a, Phys. Education (1)	(1)	(1)	Phys. Educ. 4b, Phys. Education (1)	(1)	(1)
Mil. Sc. 2a, Basic Course	(3)	(1.5)	Mil. Sc. 2b, Basic Course	(3)	(1.5)
Euth. 3, Foods and Nutrition ..	(1)	(1)	Euth. 4, Boy-Girl Relationship ^a	(1)	(1)
				28	18
	26	18			

THIRD YEAR

Agric. Bot. 13, Genetics	5	3	Agric. Chem. 2b, Quan. Methods of Analysis	7	3
Agric. Chem. 2a, Qual. Chem. Analysis	7	3	Statistics 11, Stat. Methods 1 ..	5	3
Agric. Econ. 3, Prin. of Agric. Econ.	3	3	Spanish 11, Elem. Spanish	3	3
Math. 8, Analytic Geometry ...	3	3	Major ^b	—	9
Plant Path. 11, Dis. of Plants ..	5	3	Euth. 6, Socio-Civic Training ^a ..	(1)	(1)
Spanish 10, Elem. Spanish	3	3		15	18
Euth. 5, Art. Appreciation ^a	(1)	(1)			
	26	18			

FOURTH YEAR

Physics 13, Agric. Meteor.	5	3	Spanish 13, Inter. Spanish	3	3
Spanish 12, Inter. Spanish ..	3	3	Elective	—	6
English 10, Scientific Report ..	3	3	Major ^b	—	9
Major ^b	—	9	Euth. 8, Family Living	(1)	(1)
Euth. 7, Child Care and Home Nursing	(1)	(1)		3	18
	11	18			

^a Euthenics courses are required of all female students.^b Six units of major for thesis.

THE COLLEGE OF AGRICULTURE AGRICULTURAL EDUCATION CURRICULA

Leading to the degree of Bachelor of Science in Agriculture
(Approval of the Head, Department of Agricultural Education required)

FIRST YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Bot. 1, General Botany ..	6	4	Agric. Chem. 1b, Org. Chem. ..	6	4
Agric. Chem. 1a, Gen. Chem. ..	6	4	Agron. 3, Field Crops	5	3
Agron. 2, Perennial and Indust. Crops	5	3	Anim. Husb. 2, Livestock Selection and Management	5	3
Anim. Husb. 1, Fund. of Animal Husbandry	3	3	English 2, College Composition ..	2	2
English 1, College Composition ..	2	2	Math. 3, Plane Trigonometry ..	3	3
Math. 2, College Algebra	3	3	Zool. 1, Introductory Zoology ..	6	4
Phys. Educ. 1a, Hygiene	(1)	(1)	Phys. Ed. 1b, Hygiene	(1)	(1)
Phys. Educ. 2a, Phys. Education	(1)	(1)	Phys. Educ. 2b, Phys. Education	(1)	(1)
Mil. Sc. 1a, Basic Course	(3)	(1.5)	Mil. Sc. 1b, Basic Course	(1)	(1.5)
Euth. 1, Good Grooming and the Social Graces ^a	(1)	(1)	Euth. 2, Personality Development	(1)	(1)
				27	19
	25	19			

SECOND YEAR

Agric. Ed. 31, Rural Sociology and Rural Education	3	3	Agric. Bact. 10, Agric. Bact. ..	5	3
Entom. 11, Introd. Econ. Entom.	5	3	Agric. Bot. 2, Plant Physiology	5	3
English 3, College Composition ..	3	3	Agric. Econ. 2, Gen. Economics	3	3
Physics 11, Gen. Physics	5	3	Agric. Engin. 11, Inter. Comb. Engin.	5	3
Poul. Husb. 11, Prin. of Poul. Raising	5	3	Agron. 4, Horticultural Crops ..	5	3
Soils 1, Prin. of Soil Science ..	5	3	Physics 12, General Physics ..	5	3
Phys. Educ. 3a, Phys. Education	(1)	(1)	Phys. Educ. 3b, Phys. Education	(1)	(1)
Phys. Educ. 4a, Phys. Education	(1)	(1)	Phys. Educ. 4b, Phys. Education	(1)	(1)
Mil. Sc. 2a, Basic Course	(3)	(1.5)	Mil. Sc. 2b, Basic Course	(3)	(1.5)
Euth. 3, Foods and Nutrition ..	(1)	(1)	Euth. 4, Boy-Girl Relationship ..	(1)	(1)
	26	18		28	13

THIRD YEAR

Agric. Bot. 13, Genetics	5	3	English 11, Public Speaking	3	3
Agric. Econ. 3, Prin. of Agric. Econ.	3	3	Afric. Ed. 41, Introd. to Educ.	3	3
Agric. Engin. 12, Farm Machinery and Motors	5	3	Agron. 25, Trop. Oleric.	5	3
Agron. 13, Cereals, Field Legumes and Root Crops	5	3	Spanish 11, Elem. Spanish	3	3
Plant Path. 11, Dis. of Plants	5	3	Agric. Engin. 22 Applied Farm Mechanics 1	7	3
Spanish 10, Elem. Spanish	3	3	Elective	—	3
Euth. 5, Art Appreciation 1 ^a ..	(1)	(1)	Euth. 6, Socio Civic Training ^a ..	(1)	(1)
	26	18		21	13

SUMMER SESSION

	<i>Units</i>
Spanish 12 (Intermediate Spanish)	3
Ag Ed 25 (Educ Psychology)	3

^a Required of all female students.

FOURTH YEAR

First Semester			Second Semester		
	Hours	Units		Hours	Units
Agric. Ed. 101a, Meth. of Teach.			Agric. Ed. 111a, Obs. & Pract.		
Voc. Agric.	3	3	Teach.	3	3
Agric. Econ. 9, Farm Mgt.	5	3	Agric. Ed. 111b, Obs. & Pract.		
Physics 13, Agric. Meteor.	5	3	Teach.	3	3
Spanish 13, Inter. Spanish	3	3	Agric. Ed. 101b, Meth. of Teach.		
Agric. Engin. 23, Applied Farm			Voc. Agriculture	3	3
Mech. 11	7	3	Agric. Ed. 99, Sp. Problems or	—	(3)
Elective	—	3	Agric. Ed. 102, Community Sur-		
Euth. 7, Child Care and Home			vey and Program Planning or	(3)	(3)
Nursing ^a	(1)	(1)	Agric. Ed. 131, Agric. Sch. Adm.	(3)	(3)
			Euth. 8, Family Living ^a	(1)	(1)
	23	18		12	12

^a Required of all female students.

COLLEGE OF AGRICULTURE GENERAL CURRICULUM

Leading to the degree of Bachelor of Science in Agriculture

FIRST YEAR

First Semester			Second Semester		
	Hours	Units		Hours	Units
Agric. Bot. 1, General Botany ..	6	4	Agric. Chem. 1b, Org. Chem. ..	6	4
Agric. Chem. 1a, Gen. Chem. ..	6	4	Agron. 3, Field Crops	5	3
Agron. 2, Perennial and Indust.			Anim. Husb. 2, Livestock Selec-		
Crops	5	3	tion and Management	5	3
Anim. Husb. 1, Fund. of Animal			English 2, College Composition ..	2	2
Husbandry	3	3	Math. 3, Plane Trigonometry ..	3	3
English 1, College Composition ..	2	2	Zool. 1, Introductory Zoology ..	6	4
Math. 2, College Algebra	3	3	Phys. Ed. 1b, Hygiene	(1)	(1)
Phys. Educ. 1a, Hygiene	(1)	(1)	Phys. Educ. 2b, Phys. Education	(1)	(1)
Phys. Educ. 2a, Phys. Education	(1)	(1)	Mil. Sc. 12, Basic Course	(3)	(1.5)
Mil. Sc. 11, Basic Course	(3)	(1.5)	Euth. 2, Personality Development	(1)	(1)
Euth. 1, Good Grooming and the				27	19
Social Graces ^a	(1)	(1)			
	25	19			

SECOND YEAR

Agric. Ed. 31, Rural Sociology			Agric. Bact. 10, Agric. Bact. ..	5	3
and Rural Education	3	3	Agric. Bot. 2, Plant Physiology	5	3
Entom. 11, Introd. Econ. Entom.	5	3	Agric. Econ. 2, Gen. Economics	3	3
English 3, College Composition ..	3	3	Agric. Engin. 11, Inter. Comb.		
Physics 11, Gen. Physics	5	3	Engines	5	3
Poul. Husb. 11, Prin. of Poul.			Agron. 4, Horticultural Crops ..	5	3
Raising	5	3	Physics 12, General Physics ...	5	3
Soils 1, Prin. of Soil Science ..	5	3	Phys. Educ. 3b, Phys. Education	(1)	(1)
Phys. Educ. 3a, Phys. Education	(1)	(1)	Phys. Educ. 4b, Phys. Education	(1)	(1)
Phys. Educ. 4a, Phys. Education	(1)	(1)	Mil. Sc. 22, Basic Course	(3)	(1.5)
Mil. Sc. 21, Basic Course	(3)	(1.5)	Euth. 4, Boy-Girl Relationship .	(1)	(1)
Euth. 3, Foods and Nutrition ..	(1)	(1)		23	13
	26	13			

^a Euthenics courses are required of all female students.

THE PHILIPPINE AGRICULTURIST

THIRD YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Bot. 13, Genetics	5	3	Agric. Econ. 5, Marketing Farm Products	3	3
Agric. Econ. 3, Prin. of Agric. Econ.	3	3	Agric. Engin. 13, Irrigation and Drainage	5	3
Agric. Engin. 12, Farm Machinery and Motors	5	3	Agron. 7, Plant Breeding or ..	5	3
English 4, Literature in English	3	3	Anim. Husb. 4, Animal Breeding	(5)	(3)
Plant Path. 11, Dis. of Plants	5	3	Soils 14, Fertilizers and their Reaction with Soils	5	3
Spanish 10, Elem. Spanish	3	3	Spanish 11, Elem. Spanish	3	3
Euth. 5, Art Appreciation	(1)	(1)	Elective	—	3
	24	18		21+	18

SUMMER FARM PRACTICE

FOURTH YEAR

Agric. Ed. 21, Elem. Psychology	3	3	Agric. Econ. 9, Farm Mgt.	5	3
Agron. 13, Cereals, Field Legumes, and Root Crops	5	3	Agron. 19, Tropical Pomology or	5	3
Anim. Husb. 8, Livestock Feeds and Feeding	5	3	Agron. 25, Trop. Olericulture ..	(5)	(3)
Physics 13, Agric. Meteorology ..	7	3	Spanish 13, Inter. Spanish	3	3
Elective	—	3	Elective	—	9
Spanish 12, Inter. Spanish ..	3	3	Euth. 8, Family Living	(1)	(1)
Euth. 7, Child Care and Home Nursing	(1)	(1)		13	18
	23+	18			

THE AGRICULTURAL EDUCATION CURRICULUM
(Extension Option)

Effective June, 1957

THIRD YEAR

Agric. Bot. 13, Genetics	5	3	Agric. Educ. 25, Ed. Psychology	3	3
Agric. Econ. 3, Prin. of Agric. Economics	3	3	Agric. Educ. 51, Prin. of Teach.	3	3
Agric. Engin. 12, Farm Machinery	5	3	Agric. Educ. 105, Ext. Teach. ..	3	3
Agron. 13, Cereals, etc.	5	3	Agron. 25, Trop. Olericulture ..	5	3
Plant Path. 11, Dis. of Plants	5	3	Spanish 11, Elem. Spanish	3	3
Spanish 10, Elem. Spanish	3	3	Agric. Educ. 70, Prep. and Use of Visual Aids	5	3
Euth. 5, Art Appreciation * ..	(1)	(1)	Agric. Econ. 106, Cooperatives ..	3	3
	26	18	Euth. 6, Socio-Civic Training * ..	(1)	(1)
				22	18

SUMMER SESSION

Ag. Educ. 115 (Practice Extension Teaching) 3 units

* Required of all female students.

FOURTH YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Physics 13, Meteorology	5	3	Agric. Econ. 9, Farm Mgt. ...	5	3
Spanish 12, Inter. Spanish ..	3	3	Agric. Educ. 102, Com. Survey		
Elective	—	6	and Program Planning	3	3
Euth. 7, Home Nursing and Child			Agric. Educ. 135, Ext. Adm. &		
Care ^a	(1)	(1)	Org.	3	3
	11+	15	English 11, Public Speaking ..	3	3
			Spanish 13, Inter. Spanish	3	3
			Phil. Institutions 1	3	3
			Euth. 8, Family Living ^a	(1)	(1)
				21	18

Possible Electives:

Ag. Econ. 1, Farm Bookkeeping and Accounting	3 units
Ag. Econ. 105, Economics of Marketing	3 "
Ag. Educ. 75, Community Development in the Philippines	3 "
Ag. Educ. 150, Laboratory in Group Development	2 "
Ag. Educ. 155, Principles of Rural Leadership	2 "
Ag. Engin. 13, Irrigation and Drainage	3 "
Other subjects in line with students' interests.	

^a Required of all female students.

THE SHORT COURSE IN AGRICULTURAL EDUCATION

Leading to the Junior Agricultural Teacher's Certificate
(Open only to graduates of agricultural high school or its equivalent)

FIRST YEAR

<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>	<i>Second Semester</i>	<i>Hours</i>	<i>Units</i>
Agric. Bot. 1, General Botany ..	6	4	Agric. Chem. 1a, Gen. Chem. ..	6	4
Agric. Ed. 21, Elem. Psychol. ..	3	3	Agric. Ed. 101a, Meth. of Teach.		
Anim. Husb. 12, Judging, Feed-			Voc. Agric.	3	3
ing & Management of Livestock	5	3	Agron. 3, Field Crops	5	3
English 1, College Composition ..	2	2	Agron. 25, Trop. Olericulture ..	5	3
Math. 2, College Algebra	3	3	English 2, College Composition ..	2	2
Poul. Husb. 11, Prin. of Poul-			Math. 3, Plane Trigonometry ..	3	3
try Raising	5	3	Spanish 11, Elem. Spanish	3	3
Spanish 10, Elem. Spanish	3	3	Phys. Ed. 1b, Hygiene	(1)	(1)
Phys. Educ. 1a, Hygiene	(1)	(1)	Phys. Educ. 2b, Phys. Education	(1)	(1)
Phys. Educ. 2a, Phys. Education	(1)	(1)	Mil. Sc. 12, Basic Course	(3)	(1.5)
Mil. Sc. 11, Basic Course	(3)	(1.5)	Euth. 2, Personality Devel. ^a ..	(1)	(1)
Euth. 1, Good Grooming and the				27	21
Social Graces ^a	(1)	(1)			
	27	21			

^a Required of all female students.

Histories of Departments

U. P. COLLEGE OF AGRICULTURE

DEPARTMENT OF AGRICULTURAL BOTANY

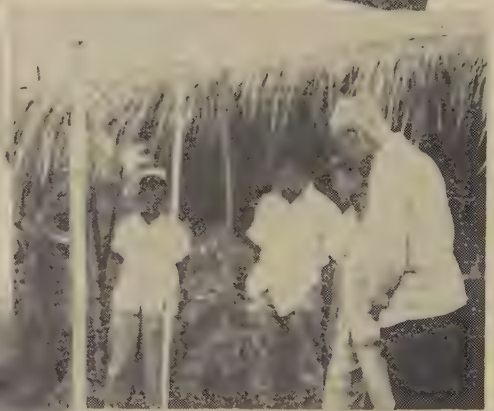
The façade of the Department of
Agricultural Botany.



Agricultural Botany staff mem-
bers.



A coconut plant under treatment
in an experiment on mineral nu-
trition.



Filipino and visiting professors
discuss studies on flowering and
fruiting of tomatoes.



An experimental field showing
chemically weeded lowland rice.

DEPARTMENT OF AGRICULTURAL BOTANY ¹
(Including Genetics)

JOSÉ M. CAPINPIN ²

The Department of Agricultural Botany started under fairly auspicious circumstances, having been favored by the incidence that the founder and first dean of the College, Dr. E. B. Copeland, was a very able plant physiologist and taxonomist of no ordinary ability. He instituted a course in elementary plant physiology and required it of all students of agriculture, for to him, "the raising of crops is nothing more or less than applied botany." Besides Copeland, other American botanists like R. M. Holman, F. T. McLean, F. C. Gates, W. H. Brown and S. F. Trelease contributed their worthy efforts in strengthening instruction and research in the Department. And what is more, bright young Filipinos like R. B. Espino, E. Quisumbing, N. Catalan, F. de Peralta, A. V. Manza and J. B. Juliano were there to pick the torch of knowledge from the Americans and carry it on aflame.

The first 20-year history of the Department of Agricultural Botany and a resumé of its research studies during the first twenty-five years' existence of the College of Agriculture were written by the late Dr. R. B. Espino.³

The second 25-year lap has been eventful and to some extent more productive. Until 1940, the Department was a four-man contingent of Dr. R. B. Espino, Dr. J. B. Juliano, Mr. R. Estioko and Mr. F. T. Pantaleon. That same year Dr. Juliano transferred to the then Bureau of Science and the latter two resigned. This paved the coming of the writer from the Department of Agronomy and of Messrs. G. B. Rotor, Jr., and J. R. Velasco.

The last Pacific war saw the momentary return of the writer to the Department of Agronomy, the resignation of Mr. Rotor, and the temporary engagement of Mr. M. Sulit's services. It also brought about the loss of a 30,000-sheet herbarium, representing the labors of devout men for more than 30 years.

¹ General Contribution No. 893.

² Professor and Head of the Department.

³ See *Philippine Agriculturist*, 18, 358-365 (1929); 23, 403-415 (1934).

The early liberation years of 1945 to 1949 were trying years in the College. With fortitude, Dr. Espino and the writer carried on, availing themselves of the little and intercalated assistance of Miss C. Baltazar of the Department of Entomology and Mr. W. Fernandez of the Department of Plant Pathology who were on partial detail in the Department.

In 1949, Dr. Velasco came back from an advanced training abroad and Mr. B. Q. Ballesteros was engaged as an assistant instructor. Soon after, however, the Department again suffered a setback when in 1951, Dr. R. B. Espino, succumbed to heart attack. His unflagging interest in students, at times misconstrued, kept him nailed to his chair—improving his notes, correcting test papers and finding ways of improving his teaching. Even in his sickbed he was more worried about how well his course was being handled and less about his state of health. It can therefore be justly said that he died with his “boots on.”

The year 1952 saw the beginning of a ferment in the College. This was spurred by American economic aid and technical assistance. The benefits derived by the Department from the assistance, which came to be known as the Cornell-Los Baños contract, were in the form of up-to-date equipment and supplies, advanced training of promising staff members and the services of Dr. S. N. Fertig of Cornell University and Dr. E. M. Palmquist of the University of Missouri, as visiting professors. An incidental benefit of the Department from the contract is the almost gratuitous but invaluable service of Dr. Margaret Stone, wife of Dr. Earl Stone, visiting professor in the College of Forestry. The ferment elicited a general appreciation of agriculture as a profession and the consequent influx of students far beyond the capacity of available facilities and personnel to conveniently handle.

To date, the Department like all other units of the College, is striking a new dynamic equilibrium which is more in keeping with its capacity. In its various activities, the Department counts with the leadership of Drs. Capinpin, Velasco and F. F. Campos, and the intelligent support of seven instructors, 11 assistant instructors and eight research assistants.

During all these years, the Department has assumed three names: from 1909 to 1917, Department of Botany; from 1917 to 1937, Department of Plant Physiology; and from 1937 to date, Department of Agricultural Botany.

INSTRUCTION

From a fairly dominant place in the early curricula the 20-unit required courses in botany were whittled down so that at the beginning of this second lap only 10 units remained, i.e., Plant Physiology 1 (General Botany) and Elementary Plant Physiology. Another five-unit course, Plant Physiology 2 (Plant Morphology), was an alternative requirement, designed for students majoring in any of the plant science departments.

As a result of another curriculum revision in 1947, Agricultural Botany 1a (General Botany), was given five units and Agricultural Botany 1b (Elementary Plant Physiology), three units. In other words there was a loss of two units among the required courses in the Department. However, because Agronomy 7 (Genetics), a three-unit required subject, was transferred to the Department and renumbered Agricultural Botany 13, it appeared that there was a gain of one unit among its required courses. In the revision of 1954, Agricultural Botany 1 (formerly Ag. Botany 1a) was further reduced to four units.

All these changes had to be made to allow the "liberalization" of the agricultural curriculum. It was contended that an agriculturist must be trained to appreciate the arts and to live in harmony with his physical and social environment. It may be unfortunate that the Department had to yield some ground, but no sacrifice is too great for the general good.

Teaching in the Department is a long continuous process, in which classroom time is just a part and oftentimes, a minor part. There are microscopic sections to prepare, live materials to collect, reports to check, quizzes to grade and manuals to compile. This was one reason for the long and painstaking labors of Dr. Espino at his desk. In a way he set the pace for his colleagues and successors to take. He expected others to have as much devotion to the subject as he had, and his devotion was almost of a religious intensity.

But the biggest challenge to the staff was at the peak of enrollment in the College in the first semester of the school year 1955-1956. There were 1,836 students in General Botany (not to mention the other botany courses), or about one-fourth of the student body (4,191). Lectures were given to sections of 460 students packed in a hall with a seating capacity of 350. Needless to say, it was as much an ordeal to the lecturers and instructors as to the students.

Conditions have since been improved. In the first semester of the current year, only 644 students were enrolled in General Botany, and lecture sections were composed of only 150 students on the average.

RESEARCH

Research in the Department from 1934 to 1959 has been characterized by a predominance of studies in fertilizer application and mineral nutrition, especially of rice. This was only to be expected because the country's rice yield per hectare has been among the lowest in the world. Another reason for the emphasis on mineral nutrition is that the late Dr. Espino was a plant nutritionist by inclination and training.

It was established time and again that of the three critical elements N, P and K, only nitrogen has a marked beneficial effect on rice plants growing on Lipa clay loam. Phosphorus and/or potassium combined with nitrogen may be slightly beneficial if at all. When not combined with nitrogen, phosphorus or potassium gives no benefit and on occasions may be harmful. These observations may be reconciled with the general theory on the essentiality of the latter two elements if it is presumed that Lipa clay loam contains enough of these elements for the normal requirements of rice plants.

Ammonium sulfate is a better source of nitrogen than either potassium nitrate or diammonium phosphate. The immediate effect of nitrogen application is a conspicuous increase of chlorophyll in the leaves. The carbon-to-nitrogen ratio in the leaves is decreased as more nitrogen is applied to the soil. When too much nitrogen is applied, the ratio goes down below seven and there is a concomitant delay in flowering and unevenness in ripening of the grains.

The best yielding Lipa clay loam contains N, P_2O_5 and K_2O in the proportion of 10:30:42 grams, or an ionic ratio of 0.71:1.27:0.87.

When grown in tuff which is exceptionally low in nitrogen, rice plants are favored by nitrogen fertilization at three stages of their growth: at the seedling stage for tiller production, at the mid-vegetative stage to forestall the drying of late-formed tillers and at the early reproductive or boot stage for heavy grain production. In fairly rich soils of lowland rice fields nitrogenous fertilizers should be applied judiciously so that the rice plants will not suffer an overgrowth of stalk and leaves to the detriment of the grains.

In general, rice plants do not use effectively nitrogen sprays; but at boot stage urea sprays on rice leaves are just as effective as a top-dressing of ammonium sulfate.

In solution culture rice plants readily consume potassium, ammonium and nitrate ions. However, if they are given all the nitrogen they can take, they produce profuse but weak leaves. When the ionic ratio of nitrogen to calcium in the solution is less than two, the plants do not show calcium deficiency symptoms. When the ratio is higher, the plants produce profuse stubby roots. An increased supply of potassium in the late vegetative stage results in more bearing tillers but relatively less filled grains. The promising solutions for the various stages of the rice plant follow:

SALTS	CONCENTRATION IN MILLIMOLAR (mm)		
	RS-17	RS-19	RS-13
Calcium nitrate	0.7	0.4	0.3
Potassium nitrate	0.3	—	—
Ammonium sulfate	0.5	0.3	0.2
Magnesium sulfate	0.3	0.3	0.3
Mono-potassium phosphate	0.2	0.5	0.3
Potassium chloride	—	1.5	2.2

With the variety Peta, RS-17 is good up to 45 days old, RS-19, from 46 to 60 days old and RS-13, from 61 days old up to maturity. The ionic ratios of N:P:K in these solutions are 27:6:5; 14:15:20; and 10:9:25, respectively. This observation implies that late application of potassium fertilizers may be effective in increasing grain yield. Further tests confirmed this deduction and led to the conclusion that the general lack of response by rice to potassium fertilization is accountable to improper timing of the application.

In attempts to utilize local material as fertilizer or soil amendment, it was established that Mayon Volcano ash has no fertilizing effect on Lipa clay loam and in very high dosage is even detrimental to grain production. Horse manure has a slight beneficial effect, while sugar cane bagasse if not properly conditioned, can be harmful to the growth of rice.

Nutritional and fertilizer studies have also been initiated on other crop plants. Also, a beginning has been made in exploring the value of minor elements to Philippine crops.

Studies showed that typical mesophytic plants like upland rice, and sugar cane would not grow on Lipa clay loam at 20 per cent saturation. For best development, the soil must be in 70 to 90 per cent saturation. The older the rice plants the more moisture was present in the soil at the time of permanent wilting. In other words the older plants had less capacity to extract moisture from a dry soil. Fertilization with ammonium sulphate similarly reduces the capacity of the rice plant to abstract tightly bound water.

Length of day was shown to affect almost all varieties of rice, but *Elon-elon* and other late-maturing varieties require day-lengths of less than 12 hours for heading. Mild night temperatures seemed to increase grain yield.

Growth of rice plants in various conditions were studied. Potted plants had less tillers and more unfilled grains than field grown plants. Shade-grown plants had less tillers and less bearing culms than those in the open. Ratoons had shorter life cycle and less yield than the plant crop.

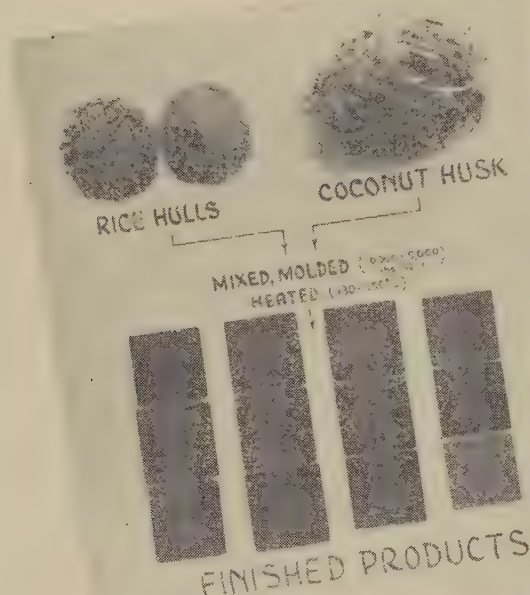
Morphology, including sporogenesis and fruit set of various crop plants, has also been studied. The morphogenic and mutagenic effects of plant extracts were investigated in an attempt to enlist new techniques in crop improvement. But, by and large, crop improvement has been effected through plant introduction and hybridization.

Among the most fertile fields of activity in the Department at present is the study of weeds and their control with herbicides.

The Department has also helped, on occasion, in the solution of certain pest and disease problems like "*bunga ng tubo*" and "*cadang-cadang*" of coconut.

DEPARTMENT OF AGRICULTURAL CHEMISTRY

The façade of the Department of Agricultural Chemistry.



Utilization of agricultural residues is one of the main researches of the Department. Shown above are the raw materials and the conditions necessary for the manufacture of wallboard.

The carver laboratory press in operation showing the general arrangement, pressure and temperature requirements.



DEPARTMENT OF AGRICULTURAL CHEMISTRY ¹

LEOPOLDO J. VILLANUEVA ²

During the first fifty years of the life span of the U.P. College of Agriculture, the Department of Agricultural Chemistry contributed, in no small measure, towards the attainment of the present high level of instruction, research, and extension. From modest beginnings, when courses in chemistry were given in "one of the ground floor rooms" of what was known as the Old College Building, the Department has grown immensely in faculty size, number of students taught, lecture rooms and laboratories, and equipment, supplies and facilities.

INSTRUCTION

The historical account of the physical plant, as well as the instructional and research facilities of the Department covering the period from 1909 to 1934, have been amply presented in previous reports written by Assistant Dean Francisco O. Santos, then Head of the Department.³

At the outbreak of the war in 1941 the Department was housed in four buildings, namely, the main Chemistry building, the U.P. Sugar Mill, the Biochemical laboratory and the newly-constructed annex for the research students. It had the staff, equipment and facilities needed to bring about maximum results in both, instruction and research. The war years, 1941-1945, however, put the Department in a very serious plight: research projects were destroyed, many of the staff members were compelled to resign due to financial difficulties, and, finally, during the fight for liberation in 1945, all its buildings were burned.

When the College re-opened in July, 1945, the Department, temporarily accommodated in one wing of the Department of Agricultural Engineering building, was ready to do its share in the reconstruction work of the College. Drs. Francisco O. Santos and Julian Banzon, Mrs. Mamerta M. Ylagan, and Messrs. Lauro A. Ynalvez and

¹ General Contribution No. 894.

² Associate Professor and Acting Head of the Department.

³ See *Philippine Agriculturist*, **18**, 281-290 (1929); **23**, 337-349 (1934).

Leopoldo J. Villanueva did the "spade work" during the first year of the reconstruction period. Only a few students were able to register, including those who took completion courses.

The Chemistry building was reconstructed in 1949, and gradually equipped with supplies, chemicals, apparatus, and other laboratory and research equipment urgently needed by the expanded program of instruction and research.

The College policy of preparing Filipinos for responsible positions was amply implemented by the sending abroad of a number of promising staff members of the Department for advanced work. Other staff members took advantage of available fellowships for their self-improvement. The return of these fellows and pensionados undoubtedly strengthened their teaching and research abilities, particularly their general usefulness to the College.

The Department staff had to be enlarged to cope with the increase in enrollment. At present it has a total of thirty-one members consisting of one professor, one associate professor, one assistant professor, one research assistant professor, five instructors, three research instructors, five assistant instructors, two research assistants, one instructor (analyst), two assistant analysts, one electron microscopist, one spectrographer, two agronomists, three technicians, one stockroom clerk, and one clerk. In addition, seven student assistants are allotted to the Department.

The present stage of the Department's development and usefulness to the state may be attributed largely to the vision of Dr. Manuel L. Roxas, first Filipino head of the Department, who saw the value of the chemist and his work in relation to agriculture and industry. Dr. Roxas believed that the Department of Agricultural Chemistry is not only for the teaching of chemistry, but for "general service to the country as well."

From a handful of students during the early years of the College, the enrollment in the basic chemistry courses steadily increased from year to year. Then it slumped through the war years and picked up slowly after liberation. The records of the Department from 1945 to 1959 show a peak enrollment in Agricultural Chemistry 1a (General Chemistry) of 1,765 students during the first and second semesters of the school year 1955-1956 and 1,011 students in Agricultural Chemistry 1b (Organic Chemistry) during the school year 1957-1958. The following school year the Department handled 114

laboratory and 28 lecture sections. Restrictions in enrollment and the maintenance of high scholastic standards by way of imposing more rigid scholastic rules which took effect in 1957, led to a partial decrease in enrollment. The gradual imposition of tuition fees, starting with the freshmen during the school year 1958-1959, has not as yet shown any effect on enrollment trends.

The courses in agricultural chemistry were revised several times to meet the requirements of changing conditions in our national economy. The Department at present offers a total of 42 courses; in this list are 14 agricultural chemistry subjects for undergraduates, 12 agricultural chemistry and 10 sugar technology subjects for both undergraduates and graduates, and, six agricultural chemistry subjects for graduate students.

One student graduated with the Master's degree, major in agricultural chemistry, and several are completing the requirements for their graduate degrees.

SUGAR TECHNOLOGY DIVISION

Through the persistent efforts of Dr. Manuel L. Roxas, a course in sugar technology was established in the College.

The beginnings of the Sugar Technology Division, including its curriculum and physical plant have been taken up in previous reports.^{4, 5, 6}

At the instance of the Philippine Sugar Institute, the course in sugar technology was revived during the first semester of 1955-1956. The reinstitution of the course was deemed necessary to prepare personnel to replace those who were about to retire from the service.

During the commencement exercises on April 7, 1959, eleven students were graduated from the Sugar Technology curriculum. By arrangement with established centrals, they performed their Sugar Mill Practice "A" (first semester of mill experience) in Central Azucarera Don Pedro, Nasugbu, Batangas, and in the Pampanga Sugar Development Co., Inc., San Fernando, Pampanga. This arrangement will continue until a pilot sugar mill is constructed on the campus, or the curriculum revised to meet the new situation. The projected pilot plant is being proposed by the Philippine Sugar

⁴ F. O. Santos, *Philippine Agriculturist*, **18**, 281-290 (1929).

⁵ F. O. Santos, *Philippine Agriculturist*, **23**, 337-349 (1934).

⁶ G. A. Guanzon, *Philippine Agriculturist*, **23**, 350-362 (1934).

Technologists Association to be acquired through Japanese reparations or by direct purchase with government appropriations.

The Division staff is highly undermanned. To carry on its teaching functions two technical personnel of the Philippine Sugar Institute, Messrs. Leoncio Cifra and Ramon A. Cruz, were loaned, without compensation, to help during the first semester of the school year 1958-1959. This arrangement may continue for sometime until a permanent staff will have been created.

RESEARCH

The research program in the Department gained impetus with the chemical investigations conducted by Dr. Manuel L. Roxas upon his return from a U.P. fellowship in the United States in 1916. He sparked a series of investigations on sugar cane, sugar, and by-products of sugar manufacture. "Applied Research" was stressed to meet the immediate needs of the country. The same objective has always been adhered to up to the present. Many of these research studies, especially those on sugar cane, sugar manufacture, and by-products, have benefited the sugar and allied industries.

From 1948 to 1950, a series of biochemical studies on Philippine rice varieties were undertaken in the Department, with the support of the National Research Council and the Institute of Nutrition with the cooperation of the Bureau of Plant Industry. Similar cooperative investigations have been undertaken on rice and corn through a grant from NARIC, and similar grants on coffee and cacao.

Lately, as a result of the appearance of *cadang-cadang* in the coconut regions in the Bicol area, attention has been directed to the determination of the factor responsible for the disease, from the chemists' point of view. No direct and conclusive evidence has as yet been established on the nature of the disease despite efforts at isolating some element which may be deficient or in excess.

The research activities of the members of the Department from 1909 to 1934 were reported by Dr. Francisco O. Santos⁷ and by Guanzon.⁸

Some of the important investigations conducted from 1934 to the present include analysis of foods and feeds, studies on coconut,

⁷ See *Philippine Agriculturist*, 17, 281-290 (1929); 23, 337-349 (1934).

⁸ See *Philippine Agriculturist*, 23, 350-362 (1934).

coconut oil and industrialization of by-products from coconut, industrialization of agricultural products and farm residues, studies on the plane of nutrition of Filipinos, biochemical studies on abacá mosaic virus and bunchy-top of abacá virus, coffee rust disease, chemistry and technology of tobacco products and by-products, spectrochemical analysis of soils, plant tissues and other related materials. etc.

EXTENSION

Although extension is a minor function of the Department, the staff has done its share in the over-all extension program of the College by participating in many of its activities. These include orienting visiting local and foreign groups on the research work of the Department through lectures and demonstrations; participating in seminars and conventions of sugar technologists and chemists; cooperating with the other departments in solving chemical problems particularly in sample analyses and attending to individual inquiries relating to industry and chemistry received through the mail.

Graduates in sugar technology and those who majored in agricultural chemistry are at present occupying responsible positions in the government, in agriculture and in industry. They serve to disseminate the good work not only of the Department but of the College as well.

DEPARTMENT OF AGRICULTURAL ECONOMICS

Façade of the Agricultural Credit and Cooperatives Institute.



ACCFA trainees at the Loan Examiners Institute held in the Department of Agricultural Economics in summer, 1957.

Staff members of the Department of Agricultural Economics analyze farm records.



A "tapahan". The research staff of the Department observed this device in a study relating to improved processing and merchandising of coconut products.

DEPARTMENT OF AGRICULTURAL ECONOMICS ¹

PEDRO R. SANDOVAL ²

The contribution which agricultural economics can make in the solution of the complicated economic problems in the Philippines was perhaps first recognized when the Department of Rural Economics was established in June, 1919.³

INSTRUCTION

Courses. Two courses, namely, principles of rural economics and farm accounting, which were first taught in 1917-1918 but were suspended temporarily, were re-established when Mr. Evett D. Hester, formerly principal teacher at the La Union Provincial High School, was appointed associate professor at the College in 1919. In addition, he instituted a course in economic conditions in the Philippines which was made introductory to the two courses.

With the appointment of an instructor to teach the basic course on economic conditions, another course, Rural Cooperation and Credits, was added. In July, 1925, a new course was instituted to fill the needs of students who were taking Sugar Technology. A course on marketing of farm products was offered for the first time in 1929. Additional courses were instituted for students majoring in rural economics. An increase in the number of trained staff members allowed the expansion of the Department's courses to include farm management, agricultural geography, consumer economics and elementary statistics in 1952.

In 1954-1955, the Department started offering courses at the graduate level leading to the Master of Science in Agriculture degree. A total of 16 courses are offered at present by the Department. These include those which touch on principles of agricultural economics and of accounting, marketing of farm products, cooperatives, agricultural statistics and policy, etc.

¹ General Contribution No. 895.

² Assistant Professor and In Charge of the Department.

³ Pablo N. Mabbun, *Philippine Agriculturist*, 17, 361-370 (1929).

Special topics such as public problems in agriculture, research methods, advanced agricultural economics, and graduate thesis are offered to graduate students.

Staff. The two-man staff of the Department consisted of one associate professor and one assistant instructor in 1919. During the years that followed up to 1955, the Department was characterized by: (1) a small staff, seldom consisting of more than one professor and two or three instructors or assistants; (2) heavy teaching loads which left little time for research; and (3) fairly rapid turn-over of personnel, because of better opportunities elsewhere.

With the operation of the Cornell-Los Baños contract in 1952, and the assistance of the Council on Economic and Cultural Affairs, Inc., New York, the quality and the number of the staff were accelerated. Under the contract, Cornell visiting professors are assigned to advise and assist the Los Baños staff in its efforts to strengthen and expand instruction and research activities in the Department. The expanded budget permitted the staff to grow in size. The following table shows the growth of the Department staff from 1919 to 1959.

POSITION	1919-20	1952-53	1955-56	1958-59 ^a
	<i>number</i>			
Visiting Professor	—	1	2	2
Associate Professor	1	—	—	—
Assistant Professor	—	1	1	2
Research Assistant Professor	—	—	1	1 ^b
Professorial Lecturer	—	—	1	1
Instructor	—	2	6	4
Research Instructor	—	—	—	1
Assistant Instructor	1	—	6	4 ^c
Research Assistant	—	—	3	5 ^c
Graduate Fellow	—	—	1	2

^a Includes staff members under research grants.

^b On leave, pursuing graduate study.

^c Includes three staff members under study grants abroad.

New staff members are recruited and the promising ones are sent abroad for advanced training. In 1952, only one staff member had training beyond the B.S. degree. To date, the Department has had five visiting American professors from 1952 to 1959 and has sent seven young staff members to American universities for their Master's degrees. The present staff has nine members with M.S.

degrees; three are working for their M.S. degrees and one for his Ph.D. degree in the United States.

Major students. From 1921 to 1959, the College graduated 155 agricultural economics majors including two with M.S. degrees. Most of these graduates are now employed in the Division of Agricultural Economics (Department of Agriculture and Natural Resources), Agricultural Tenancy Commission, Rehabilitation Finance Corporation,⁴ Agricultural Credit and Cooperative Financing Administration, Central Bank and other agencies.

RESEARCH

Research work was conducted mostly by undergraduate students majoring in agricultural economics until 1956 when the teaching load of some staff members enabled them to engage in major research work other than mere thesis supervision.

The following table summarizes studies conducted by the Department of Agricultural Economics from 1919-1958. These studies include published and unpublished theses and other articles which saw print in the *Philippine Agriculturist*. However, these do not include unpublished theses which were destroyed during the war.

TYPE OF STUDY	1919-1944	1945-1958
Farm Management, Tenancy, Socio-Economic Surveys	67	75
Farm Credit and Cooperatives	8	18
Marketing	11	37
Prices	2	3
Total	88	133

To encourage undergraduate research, a donor who prefers to remain anonymous, has been giving through the Farm Economics Association of the Philippines, the "Dean B. M. Gonzalez Research Award", and lately, a gold medal for the best undergraduate thesis in agricultural economics. The latter was started in the school year 1955-1956, and to date four major students, namely: Benjamin Paredo (1956), Vicente Quintana (1957), Ernesto Abarientos (1958), and Jose P. Gapud (1959) have received this award.

Despite the heavy teaching schedules of staff members, the Department has made great contributions in the field of agricultural

⁴ Now known as Development Bank of the Philippines.

economics. Based on data gathered by thesis students, Hester and Mabbun published a comprehensive analysis of Philippine farm tenancies in 1924. Several other papers were published by Hester on Philippine production of different major crops, such as sugar, rice and rubber, and on problems of current economic interest. Sacay prepared a circular on a simplified method of keeping farm accounts. Velmonte analyzed problems of farm capital investment and land taxation in the Philippines. Mabbun conducted studies on tobacco marketing and rural credit associations and Dalisay, on rice tenancies and costs of production. Arnaldo wrote on the operation of rural credit associations in Panay island.

The limitations of thesis studies were remedied with the implementation of the Cornell-Los Baños contract. The increase in funds as well as personnel made it possible to undertake studies on a larger scale than was possible with undergraduate theses. In April, 1955, Emilio Quintana was appointed research assistant professor. The teaching and research activities of the Department were reorganized to allow each staff member to engage actively in at least one major research work besides working with undergraduate thesis students.

Current studies. In farm management, Quintana is developing methods for gathering and analyzing data on land use, labor requirements and seasonal farm labor distribution for five major enterprises. De Guzman is determining the effect of production incentives and technical guidance on farm practices, and yields and income of rice tenant farmers. Sandoval and Abarientos are collecting monthly input-output data from cooperating commercial poultry farms to determine capital requirements, operating costs and returns, and marketing practices.

In the field of marketing, Cruz and Tiongson are analyzing data obtained from rice retailers and wholesalers to learn about their marketing practices and operations. Included in these studies is a business analysis of retail stores. Alipio's study of FACOMA palay warehouses and their cost and returns is underway. Quintana is working on a developmental study of improved merchandising practices for livestock, vegetables, fruits, and poultry products. An analysis of factors affecting prices of major farm products is being made by Kuhonta. On the economics of rice and corn consumption, Vega is conducting a nation-wide survey of consumers' practices relating to the purchase and use of rice, corn and their substitutes.

Using a two-stage sample, Sacay is making an economic analysis of FACOMA lending operations and of farmers who receive crop loans, in order to determine factors affecting loan repayment.

In rural public finance, Bangcaya is concluding a study of real property tax as a source of income for barrio government. This is part of a larger effort to measure the competence of barrio people to conduct their own affairs through self-government.

New trends. Attempts to introduce changes in the way some local farm products are being marketed has been made by Darrah *et al.* for citrus, vegetables, and rice. Preliminary findings show that retail stores which sold citrus in ventilated plastic bags containing six to 12 fruits each were able to double their sales. Of this increase two-thirds was apparently due to plastic bags and one-third to an increase in regular sales. In vegetable marketing, an attempt to reduce transportation losses by replacing bamboo baskets with wooden crates gave promising results. Preliminary findings show that lettuce packed in bamboo baskets lost 2½ kilos in transit from Baguio to Manila while those shipped in wooden crates had no losses, other than essential trimming.

Attempts to conduct problem-solving research in farm management were started in 1958. The Pilot Study in Farm Development of the Department aims to find out how research findings may be adopted by small farmers and how these will affect their incomes. In this project, farm management extension techniques and tools are being developed by a team of technicians with specialization in animal husbandry, plant pests and diseases, farm crops, and farm management.

EXTENSION

During the past few years the Department has been disseminating its research findings through participation in local and international conferences, seminars and workshops sponsored by the FEAP (Farm Economics Association of the Philippines) and other agencies; publication of scientific and semi-scientific papers in the *Philippine Agriculturist* and other local journals and magazines, and the establishment of the ACCI (Agricultural Credit and Cooperatives Institute) which will open in June, 1959.

Professors von Oppenfeld and Quintana participated in the Far East Credit Workshop held in Manila in June, 1956, and in the first Food and Agriculture Organization-sponsored Seminar on Farm

Management held in Tokyo in October, 1956. Professor B. N. de los Reyes represented the Philippines in the second FAO Seminar on Farm Management held in India in October, 1957; Dr. von Oppenfeld and Mr. de Guzman attended the third conference in Bangkok, Thailand in March, 1959. The Department was also represented in the Tenth International Conference of Agricultural Economists held in Mysore, India, in August, 1958, by Professors von Oppenfeld, L. B. Darrah, P. R. Sandoval, and Mr. F. A. Tiongson. Staff members have also been consulted frequently on agricultural matters by government agencies. The Department has been cooperating with the ACCFA (Agricultural Credit and Cooperative Financing Administration) in providing pre-service and in-service training for its personnel.

Most of the staff members are either associate or regular members of the FEAP. This association is made up of government officials of various agencies actively engaged in the study of economic problems of agriculture. It aims to promote and stimulate research in the field of agricultural economics. Its constitution and by-laws provide that the secretary-treasurer of the association must be a staff member of the Department.

Since its founding the Department has published 153 research papers in the *Philippine Agriculturist*. In 1957, it put out the first experiment station bulletin of the College entitled, *Farm Management, Land Use and Tenancy in the Philippines*, written by Horst and Judith von Oppenfeld, P. R. Sandoval and J. Sta. Iglesia. The following year, Dr. L. B. Darrah published his *Marketing Farm Products in the Philippines* and Dr. Amando M. Dalisay his *Development of Economic Policy in Philippine Agriculture*.

DEPARTMENT OF AGRICULTURAL EDUCATION

The façade of the Department of Agricultural Education.

The Department staff.

Visiting professor discusses research project on the development of teaching materials for vocational secondary schools.



Participants and delegates to the First Regional Training Center for Asia and the Far East held in the College in summer, 1958.

Student teacher in home economics demonstrating to her class.

A laboratory class in the U. P. Rural High School.

DEPARTMENT OF AGRICULTURAL EDUCATION ¹ (Including the U.P. Rural High School)

MARTIN V. JARMIN ²

The golden jubilee anniversary of the U.P. College of Agriculture is also the thirtieth anniversary of the Department of Agricultural Education. The Department was established by the Board of Regents in March, 1928, and was formally opened in 1929 after the building had been completed. The U.P. Rural High School which is the laboratory and training school for the Department was established in the same year.

To organize the Department the University secured the services of Mr. Merle A. Foster who was appointed professor under a three-year contract. In the same year the Board of Regents sent Francisco M. Sacay as a U.P. fellow to Cornell University to specialize in agricultural education. This was considered necessary to insure Filipino personnel for the Department inasmuch as "imported" faculty members would not stay long here.

Professor Foster started the work of the Department in August, 1928. He secured the necessary personnel from graduates of the College and from the United States. The Bureau of Education (now Bureau of Public Schools) detailed one of its staff to the Department due to lack of trained personnel in agricultural education in the College then and to acquaint the Department with the needs of the Bureau.

In June, 1929, the Department staff consisted of nine members as follows: one professor, one assistant professor, four instructors, and three assistant instructors. Of this number four were Americans. Professor Foster was both head of the Department and principal of the U.P. Rural High School. His contract terminated on August 21, 1931, and Dr. Sacay who returned on August 11, 1931, was appointed in charge of the Department and principal of the U.P. Rural High School effective August 22, 1931. Since then the administration of the Department and the U.P. Rural High School

¹ General Contribution No. 896.

² Assistant Professor of Agricultural Education and Acting Head of the Department.

was always under the Head, until June 15, 1952, when Professor Gil F. Saguiguit was appointed principal of the U.P. Rural High School. Dr. Sacay continued to be head of the Department until September 1, 1954, when he took leave of absence and ultimately transferred to the Agricultural Credit and Cooperative Financing Administration (ACCFA). Professor Gil F. Saguiguit was appointed to succeed him. On January 1, 1957 Professor Martin V. Jarmin was appointed Principal of the U.P. Rural High School. He held this position until August 16, 1957 when he was appointed acting head of the Department vice Professor Saguiguit who left for the United States as a Rockefeller fellow to work for a Ph.D.

From nine members in 1929, the personnel increased to thirteen in 1931, four of whom were Americans. This number was maintained until the outbreak of the war in 1941. During the Japanese occupation some staff members transferred to other agencies and consequently new ones were appointed to replace them. Classes during the Japanese occupation, however, came to an abrupt end in 1944 when the battle for liberation began.

When the College reopened in 1945 only two of the pre-war staff members of the Department were available. One was massacred by the Japanese and another one died of illness. The rest sought work elsewhere. By the end of 1945 the number of personnel increased to eight. In view of the completion work in the college courses and in the U.P. Rural High School, the Department had to "borrow" faculty members from other departments of the College. Nine faculty members some of whom were Department heads willingly gave assistance to the Department staff.

INSTRUCTION

Staff. Due to the increased enrollment in subsequent years and the institution of new courses the personnel of the Department was gradually increased to its present number of twenty-four. This number includes five assistant professors, ten instructors, eight assistant instructors and one research assistant. In addition to this force the Department since 1952, has been assigned five American visiting professors from the Cornell team, as part of the ICA technical assistance program. Three of these members have finished their tour of duty with the College.

Courses and curricula. Agricultural education courses were offered for the first time in the College during the second semester of

the school year 1928-1929. A one-year curriculum for holders of B.S.A. (Bachelor of Science in Agriculture) leading to the Certificate in Agricultural Education was instituted. The first group composed mostly of assistant instructors and numbering seven, graduated with the Certificate in Agricultural Education in 1931.

In 1935, an arrangement was made whereby selected students could complete the B.S.A. and C.A.E. (Certificate in Agricultural Education) concurrently by taking the 26 units of prescribed and free electives in the Department.

To give greater emphasis on research in the field of agricultural education, the Department began to offer major work in 1938. The course in Agricultural Education 100, Thesis, was instituted. The first group of agricultural education majors, consisting of five seniors, graduated in 1940.

In 1953 the agricultural education curriculum was instituted to provide a well-rounded preparation for students intending to go into agricultural teaching. Students working for a B.S.A. degree could enroll in this curriculum after finishing the requirements of the common first two years in agriculture. In the same year the two-year curriculum leading to the Junior Agricultural Teacher's Certificate, was also instituted. This course is open to agricultural high school graduates only.

To give more preparation to those who intend to undertake extension work after graduation, an Extension Option in the Agricultural Education curriculum was instituted in June, 1957.

The graduate program in the Department gained recognition in 1956 when nine postgraduate students enrolled for the M.S. degree. The institution of Agricultural Education 300, Master's Thesis, was made as early as 1950, but because of insufficient graduate courses in the Department no one had actually worked for an M.S. degree before 1956.

With the institution of the Home Technology curriculum in 1951, the number of courses in Agricultural Education increased because education was selected as a major for home technology students. Hence, the training of vocational homemaking teachers became a responsibility of the Department.

The U. P. Rural High School

From its establishment in 1930 up to 1939, the agricultural curriculum of the school was the same for boys and girls. However,

it suffered major changes during the Japanese occupation. English courses and U.S. History were replaced by Nippongo, Filipino National Language, and Reading and Character Education. The curriculum as originally instituted was the most unique in the sense that it offered both vocational and academic subjects to the students.

In 1939, home economics courses were instituted for girls. Since then the Rural High School has been maintaining two curriculums, one for boys and another for girls. The first group to graduate in the girls' curriculum was class 1943.

When the school reopened after liberation in 1945, the English subjects were restored and Filipino National Language was retained. Philippine Social Life was instituted in place of Farm Business Arithmetic.

In 1954, there was a major change in the vocational agriculture offerings, from a departmentalized system to a modified cross-sectional plan. In the departmentalized system, first year students took horticulture; second year, animal husbandry; third year, farm crops; and fourth year, farm economics. Three hours on week days and four on Saturdays were utilized for field work. In the modified cross-sectional plan, all the major areas of agriculture are taken in each year with major emphasis on animal husbandry in the first year, horticulture in the second year and field crops in the third year. Time spent for field work is the same as in the departmentalized. In 1958, revisions were made in the academic subjects. Mathematics offerings were strengthened.

Since its founding the U.P. Rural High School has turned out about 759 graduates many of whom have distinguished themselves in their chosen fields.

RESEARCH

The first few years which followed the establishment of the Department were devoted primarily to organization, planning, and instruction. In 1933 the Department undertook two research studies.

In the succeeding years more attention was given to investigational work. Some 73 research projects in the different areas of inquiry were completed and many of them were published in the *Philippine Agriculturist* and other publications.

In addition to research papers, a number of manuscripts were written and published by members of the staff. They covered a wide range of subject matter--vocational education, extension work, community development, rural life, economics, government, and other social sciences.

With the appointment of visiting Cornell professors in the Department, research activities were revitalized. A research project on the development of teaching materials for use in Philippine secondary agricultural schools, which was financed by a grant from the Council on Economic and Cultural Affairs, Inc., was undertaken. The research team was able to develop 13 manuals dealing with important Philippine crops and livestock. Two of these manuals have been printed and plans for their reproduction are on the way. Similarly, plans for reproducing the other eleven manuals are in progress.

Another research project of the Department, which is greatly welcomed in the field, is the compilation and publication of the first Summary of Studies in Agricultural Education in the Philippines.

EXTENSION

The extension activities of the Department were carried out in different ways as follows:

- 1) Disseminating results of research in the College through the *Biweekly Bulletin*, and the *Handbook of Philippine Agriculture*.
- 2) Assisting teachers who were preparing for civil service examinations.
- 3) Holding summer institutes for agricultural teachers and extension workers.

The first summer institute for agricultural teachers was conducted in the summer of 1949. Another one was held in 1950.

The first orientation course for agricultural extension workers was held on the campus from May 7 to May 19, 1951, under the leadership of the Department. It was assisted by personnel from other Departments and the Office of Extension and Publications of the College and the Department of Agriculture and Natural Resources.

Extension summer courses have been offered regularly since 1955. During the summer of 1958, the Food and Agriculture Organization of the United Nations in cooperation with the Bureau of

Agricultural Extension and the College through the Department sponsored the First Regional Extension Training for Asia and the Far East. Eighteen participants from 11 countries in the region took the course besides 34 participants from the Bureau of Agricultural Extension.

4) Assisting private entities which established agricultural high schools.

5) Supplying school administrators and principals with information on types of vocational courses in agriculture for secondary school students. This was especially done during the time when many agricultural schools were being established.

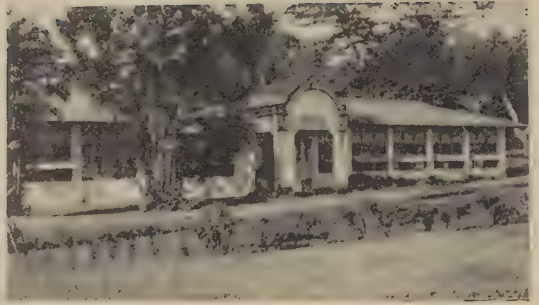
6) Assisting in organizing field days of the College.

7) Assisting other government agencies in developing their training programs.

The Department has been cooperating with the Office of the President of the Republic of the Philippines represented by the Presidential Assistant on Community Development in implementing the training program for community development workers from early 1956 to date.

DEPARTMENT OF AGRICULTURAL ENGINEERING

The Department of Agricultural Engineering Building.



Agricultural engineers experiment with this dryer to find effective methods of drying rice and corn.



College professors check the progress of irrigation experiments.



Some existing farm implements and tools in the Philippines.



Farmers watch tractor demonstrations during field day held annually by the Department.



DEPARTMENT OF AGRICULTURAL ENGINEERING ¹

ALEJANDRO B. CATAMBAY ²

The Department of Agricultural Engineering was organized in 1912 when Albert George Glodt, B.S.C.E. and B.S.M.E., was appointed associate professor of agricultural engineering. Prior to this date, a course in rural engineering was given in the Department of Agronomy by Harold Cuzner, B.S., who was then the farm superintendent.

In this connection the men who were closely identified with the development of the Department deserve mention. Professor Albert G. Glodt was head of the Department from 1912 to 1914; Professor Harold Cuzner, from 1914 to 1921; Professor Irving Leonard, from 1921 to 1923; Professor C. P. Johnson, from 1923 to 1926; and Professor Anastacio L. Teodoro, from 1926 to 1947 with Professor Felix Maramba acting as head from 1927 to 1928 when Professor Teodoro left to undertake graduate work in the United States. The incumbent, Professor Alejandro B. Catambay, assumed headship in April, 1947.

From 1910 to 1921, the core of instruction was on the application of civil engineering principles to agriculture which included among others, surveying, irrigation and drainage, roads and bridges, and farm buildings. Very little attention was given to farm power and farm machinery. Gradually, the focus of course development shifted to power and machinery; however, efforts directed to improving the existing courses remained unabated.

After World War II, a concerted drive to boost agricultural production in order to solve the food problem of the country was launched. The effort of the College to make its due contribution in the solution of the country's agricultural problems, was reflected in the revision of its curricula and intensification of its research activities. In keeping with this development, the Department of Agricultural Engineering expanded research activities and included in its course offerings, farm mechanization, rural electrification and

¹ General Contribution No. 897.

² Professor and Head of the Department.

processing farm products such as drying, storing, and milling of rice and corn.

After fifty years of existence of the institution it is but proper to make an inventory of its activities and evaluate its progress and accomplishments. The Department of Agricultural Engineering taking cognizance of its responsibilities expanded its activities in keeping with its role as an integral part of the College. To better appreciate the growth of the Department the following brief report is presented in three headings covering its major functions.

INSTRUCTION

Courses. From 1910 to 1921 the courses given in the Department dealt on surveying, mechanical drawing, and farm buildings. Sewage disposal plants, and irrigation and drainage were given as additional topics. Professor Glodt and later Professor Cuzner maintained these course offerings until 1921. In 1922, Mr. Teodoro introduced courses in farm mechanics, farm gas engines, and farm machinery. As the need for varied technical information demanded by the economic and agricultural development of the country grew, several courses calculated to provide education on fundamental principles and applied training to students were instituted. A total of forty-five subjects make up the present courses offered by the Department. These are distributed as follows: thirty in agricultural engineering, seven in mathematics, six in physics including agricultural meteorology, and two in statistics.

The Department course offerings provide for the engineering requirements in all curricula in the College and also for the five-year agricultural engineering curriculum given jointly by the College of Engineering and the College of Agriculture.

Personnel. The personnel of the Department started with one man and steadily increased to keep pace with the growth of the institution. Of the present staff of thirty-five members, two are professors with MSAE degrees, one is an assistant professor with a Ph.D., seven are instructors, two are research instructors, fourteen are assistant instructors and nine are research assistants. A clerk and a technician are also included in the staff.

RESEARCH

Investigational work in the Department began as early as 1915. Professor Harold Cuzner started a study on the determination of the

strength and durability of bamboo for farm fences. He also designed a cassava starch-making machine. From this period up to World War II, the strides made in this function of the Department were rather slow for several reasons. There were not enough personnel to pursue research work vigorously and the equipment and facilities were inadequate. Investigations were conducted by members of the staff who were in majority of cases too occupied with their teaching load.

After the war however, favorable circumstances augured a more vigorous implementation of a research program.

Some of the research projects conducted in the Department from 1945 up to the present which have contributed in one way or another to the agricultural and economic progress of the country are:

1. Use of alcohol and alcohol-gasoline blends as fuel for automotive, tractor, and farm engines.
2. Use of producer-gas from charcoal as fuel for automotive and farm engines.
3. Proper management of irrigation water.
4. Efficient application of irrigation water.
5. Overhead irrigation of upland crops.
6. Use of bamboo and concrete tiles for underdrainage of water-logged land.
7. Improvement of designs of farm buildings.
8. Mechanization of crop production.
9. Designing and development of farm labor-saving devices.
10. Improvement of and designing tools and implements for small farms.
11. Improvement of and designing small farm transportation facilities.
12. Use of soil-cement blocks for farm buildings.
13. Designing kitchen and other facilities for the farm home.

EXTENSION

The members of the staff, whenever occasion arose, several individually or in group in various capacities. Some of the more important activities of the staff in this area were:

1. Answering questions of farmers involving agricultural engineering problems. This was done by actual demonstration or through correspondence. Among the more common problems brought out by the farmers were:

- a. Proper selection and use of farm equipment.
 - b. Correct method, time, frequency and rate of application of irrigation water for upland and lowland crops.
 - c. Proper method of draining agricultural land.
 - d. Proper method of drying, storing, and milling rice and corn.
2. Participating in symposia and seminars on:
 - a. Irrigation problems in rice culture.
 - b. Rice statistics.
 3. Organizing a national committee on irrigation research.
 4. Acting as consultant on the improvement of the grain elevators and copra driers of the ACCFA (Agricultural Credit and Cooperative Financing Administration).
 5. Conducting tests of rice mills and plows for the ACCFA.
 6. Conducting test of plows for the NARRA (National Relief and Rehabilitation Administration).
 7. Responding to occasional requests of NARIC (National Rice and Corn Corporation) to make inspection of its facilities and submitting appropriate recommendations.
 8. Selecting sites of wells for communal domestic water supply for settlers in General Santos, Cotabato, for the ACCFA and NDC (National Development Company).
 9. Holding informative conferences with foreign scientists and other foreign and local visitors on official visits.
 10. Giving in-service training sponsored by the Community Development Center to trainees on such fields as irrigation, drainage, and water supply; skills on the use of small farm tools, implements, and home equipment; and construction, repair and maintenance of barrio roads.

DEPARTMENT OF AGRONOMY

The Agronomy Main Building.

Mist House where studies on propagation by cuttings are being performed.

Chico plants (*Achras zapota* Linn.) grown from stem cuttings.



College professor examining a pink *Musaenda* hybrid, a product of years of cross-breeding between *Doña Aurora* and *Doña Trining*.

DANR Undersecretary speaking before Certified Seed School trainees.

Ground orchids (*Spathoglottis plicata* Blume) propagated by clonal selection at the College nursery.

DEPARTMENT OF AGRONOMY ¹

VALERIANO C. CALMA ²

Fifty years ago, when the Department of Agronomy was established by Dr. Edwin Bingham Copeland, the first dean of the College who was also to become the first head of the Department, it had a three-man staff, four courses to offer and a handful of students among them the late Manuel L. Roxas and Clodoaldo Tempongko, and Jose F. Zamora who attended classes in one portion of a "building of mixed material." Today it has a 49-man staff (excluding visiting Cornell professors), 31 courses to offer, an enrollment of about 3,500 students, five divisions housed in 12 buildings; a large number of cultures, miscellaneous plants of economic importance, and orchards which "occupy most of the 366 hectares of land of the College not occupied by buildings."

INSTRUCTION

Courses. The courses offered at present cover practically all important crops of the Philippines "well adapted to the diversified nature of our national agriculture." Most of them are concerned mainly with principles and practices of crop production and plant breeding. The rest deal on a wide variety of subjects ranging from floriculture and landscape gardening to vegetable gardening and experimental pomology.

In addition, farm practice is taught to students under the General Curriculum. Short courses too, such as Plant Propagation Techniques, Seed Certification and Distribution, etc., are taught to various government-sponsored trainees during the year.

Personnel. The Pacific war greatly affected the number of qualified faculty members of the Department, the lack of which is still its immediate problem.

During the school year 1945-1946, the Department had only five faculty members, namely, one associate professor, two assistant professors, one instructor, and one assistant instructor. Today, its 49-

¹ General Contribution No. 898.

² Professor and Head of the Department.

man staff is made up of three professors, one assistant professor, 13 instructors, 14 assistant instructors and 18 research personnel.

RESEARCH

Research in the field of agronomy has been broad in scope and includes all aspects of crop production. Such subjects as introduction and acclimatization of introduced plants, methods of propagation, hybridization and selection, improved methods of land preparation, cultivation, fertilization, harvesting, preparation of farm products for the market, fruit preservation, storage of farm products and methods of lowering cost of production have been underscored in the Department's research program.

Research was bolstered with the arrival of American visiting professors as a result of the implementation of the Cornell-Los Baños contract in 1952. These professors include Drs. H. K. Hayes, Paul Work, James L. Brewbaker, A. M. Brunson, the late Thomas L. York, S. C. Salmon, H. L. Everett, R. B. Musgrave, L. H. MacDaniels, H. A. MacDonald and W. C. Kelly.

It is impossible to state accurately the number of scientific articles published by the Department, especially the years covering 1936 to 1946. Many papers were either burned or lost during the Japanese occupation. But from 1909 to 1934, a period of 25 years, some 615 papers were contributed to Philippine scientific literature, and during the years 1951 to 1958, some 680 were turned out by the Department.

Most of the studies conducted were on the fundamental aspects of crop production — varietal selection and crop adaptation, crop spacing and or plant population, fertilization and rotation of crops, and breeding of various tropical and semi-tropical crops.

Farm Crops Division

Most of the work in this Division has been focused on varietal trials and selection on the staple crops, namely, rice and corn. Crop adaptation studies are being continued on some important cereals, like sorghum, millet and wheat. Plant population and fertilizer experiments on important pulses like soybeans, peanuts, mungo and cowpeas, and root crops, like cassava, gabi, and sweet potatoes have been started. Studies are now being undertaken in different regions in the Islands with the farmers directly cooperating. For this

venture credit is due Dr. R. B. Musgrave who initiated this program, and Dr. H. A. MacDonald who is ably picking up where his predecessor left off.

Equally encouraging is the work of the Division in sugar cane research. Outstanding sugar cane seedling varieties are now in the process of testing, selection, and propagation. This started with the production of C. A. 39 cane which was one of the main contributions of the Department some ten years ago. Cane varieties for forage are also being developed. More liquid solutions which lengthen the life of the sugar cane arrow for hybridization, are being ascertained.

Division of Plant Breeding

Under the able leadership of Dr. D. L. Umali and Professor H. K. Hayes, the rice and corn improvement program was started in 1952 with the cooperation of the Bureau of Plant Industry and Bureau of Agricultural Extension. The program has so expanded that at present agricultural high schools and colleges, penal farms, NARIC, ACCFA and even private firms cooperate in the testing of promising varieties and the multiplication and distribution of certified seeds.

More than 900 local rice varieties and 2,362 varieties of the world collection have been grown and screened in observational nurseries and many high-yielding varieties desirable for breeding purposes have been selected.

For six years (1953-1958), field trials of 56 standard upland rice varieties and 300 promising varieties from observational nurseries were made on the following locations: College of Agriculture; La Granja Sugar Experiment Station, La Carlota, Negros Occidental; Ilagan Tobacco Experiment Station, Ilagan, Isabela; Lamao Experiment Station, Lamao, Bataan; Maligaya Rice Experiment Station, Munoz, Nueva Ecija; Pili Agricultural School, Pili, Camarines Sur; Aroman Experiment Station, Aroman, Cotabato; and Bago Oshiro Abaca Experiment Station, Davao City.

Similar trials were made on 420 lowland rice varieties at the Maligaya Rice Experiment Station, Muñoz, Nueva Ecija; Pili Agricultural School, Pili, Camarines Sur; Lamao Experiment Station, Lamao, Bataan; and Central Philippine University, Iloilo, Iloilo.

Purification tests of both upland and lowland rice varieties followed. Of the varieties tested 14 were found superior to all other

available local and foreign varieties. These were approved by the Seed Board and recommended to farmers in places where they are adapted. The first technical bulletin published by the College in December, 1958, contains a brief description of each variety.

A cooperative corn improvement program has been carried on side by side with the cooperative rice improvement program. More than 60 provincial strains were collected and over 135 varieties, 500 inbreds and 70 hybrids were introduced from the United States of America, South America, Mexico and other countries. Over a thousand inbred lines were extracted from selected local and foreign varieties and these were tested for general and specific combining ability to determine which inbreds will do well in hybrid combinations. Double-cross hybrids between high combining inbred lines of College Yellow and Cuban Yellow proved outstanding.

A series of regional tests was started in 1954 when 89 yellow and 27 white flint double-cross hybrids were tested for adaptability in different localities. As a result of these repeated regional tests, the Seed-Board approved the release of four outstanding yellow flint double-cross hybrids and a white flint double-cross hybrid.

Breeding for abaca hybrids resistant to abaca mosaic and bunchy-top diseases has also been undertaken. Crosses between pacol and abaca proved to be resistant to these diseases. The first generation backcrosses were produced to improve the fiber quality of these hybrids.

Breeding work on sorghum, wheat and various legumes and root crops are also being undertaken to produce and make available to farmers improved varieties.

Industrial Crops Division

Research on fibers, oil-bearing plants, spices, and coffee and cacao were accelerated. Notable among the studies dealt on the selection of superior varieties and strains of coffee. Different cacao varieties were hybridized. Studies were made on the various fertilizer requirements of ramie on both the plant and ratoon cultures. Investigations, too, on tensile strength of different fiber plants were stepped-up. The research arm of the Division was further strengthened by the recent arrival of visiting Cornell professor William C. Kelly.

Horticulture Division

The Division with the cooperation of the different departments of the College is mainly responsible for the beautification of the College Campus. Post-war contributions of this Division include the rejuvenation of the College orchard, introduction of various fruit and ornamental plants from neighboring countries, and studies on the selection of superior banana, mango, avocado, and other fruit trees. This was done through the various methods of asexual propagation — budding, layering, top-working, etc. Selected trees were also tested to find out the influence of different cultural operations, fertilizers, etc. Plantings too, on several projects on citrus, lanzones, chicos, and rambutan were made.

Vegetable Crops Section

Emphasis on vegetable breeding research was initiated by the late Dr. Thomas L. York. To date about a thousand local and foreign vegetable varieties and strains have been obtained and tried in observational plantings or formal yield tests.

This Section has experimented on the possibility of cultivating certain kinds of vegetables not commonly grown here but which may prove adaptable to local conditions. Examples of these are the bush sitao, the De Cieco variety of broccoli, the Pericicaba cauliflower and the Mary Washington asparagus.

Progress in research in the Department has been made possible by numerous grants such as the NARIC Grant, the Seeds for Democracy Grant, the ACCFA Grant, and lately, the Rice and Corn Research Grant, and the cooperation given by other departments in the College, namely, the Department of Animal Husbandry, the Department of Soils and the Department of Agricultural Engineering. Credit is also due various farmers and agencies who were more than glad to spare a section of their farm space for cooperative work.

EXTENSION

The Department has spared no effort in sharing the results of research with the rural people. This it has done primarily by sponsoring annual farmers' days like the Rice and Corn Field Day and the Vegetable Crops Field Day. On these occasions the farmers see actual farm demonstrations and exhibits and participate in open forums.

Lectures and demonstrations are from time to time given by senior staff members to students of various high schools, vocational schools, and other groups. Topics range from production of staple crops to the various methods of plant propagation.

Circulars and bulletins are distributed to visitors of the Department and to farmers through the BAE (Bureau of Agricultural Extension). Personal inquiries are answered directly through correspondence.

For the last fifty years, the Department has been trying to cope with the ever-pressing problem of economic self-sufficiency. Despite its limited resources it has managed to keep pace with the progress in scientific farming. It realizes of course that if it has to lead in instruction and research on crop production, it has to do more than what it has done during the past fifty years. This it can do with the continued support of the government and the various private agencies interested in promoting the cause of Philippine agriculture.

DEPARTMENT OF ANIMAL HUSBANDRY

Entrance to the Department of Animal Husbandry compound.



College receiving machine for freezing bull semen from ICA in 1957.

Calves artificially sired with the use of frozen semen from Ithaca, New York, U.S.A.



Participants in the Philippine Poultry Improvement Plan (PPIP), 1958.

Duck-ham making, a study initiated by the Department in 1957 designed to benefit the rural housewife.



DEPARTMENT OF ANIMAL HUSBANDRY ¹

AMADO C. CAMPOS ²

As we look back to the fourteenth of June, 1909, when, for the first time in this college, a course in animal husbandry was offered by an instructor to a handful of students in an improvised classroom with some borrowed animals as laboratory specimens, we of the present cannot help taking pride in what the Department has accomplished through the intervening years. With the college nearing its fiftieth year of existence, it is timely and fitting that we take stock of these achievements.

Progress has been achieved in almost every level: instruction, personnel, physical assets, research, and extension. The achievements in the first three categories are best seen in what exists at the present time; those of the last two, by what has been done during the entire 50-year period.

INSTRUCTION

Compared to the one animal husbandry course offered about 50 years ago, the Department now offers 27 courses. These courses have to do with the fundamentals of animal husbandry (livestock and poultry), the principles of animal nutrition, dairy husbandry, and the various aspects of poultry raising, farming, management and breeding.

In addition, animal husbandry farm practice is taught to senior students under the general curriculum. Short courses dealing with the feeding and management of farm animals (cattle, carabao, goats, swine and poultry) and the processing of cheese, butter and meat are taught to various government-sponsored trainees during the year. The Department in cooperation with the Bureau of Animal Industry operates an artificial insemination technicians' school where student trainees are taught the proper methods of collecting, preserving and inseminating semen from valuable stud animals.

¹ General Contribution No. 899.

² Assistant Professor and Acting Head of the Department.

Aside from the thousands of students who took prescribed and elective courses in the Department, a total of 402 students majored in the various divisions of the Department with the following distribution: poultry, 199; swine, 72; dairy, 52, beef cattle, 37; forage, 16; horses, 13; sheep and goats, 11; and rabbits, two. So far, two postgraduate students have each obtained a master's degree. Two are taking up graduate work at present.

Personnel. There has been a steady increase in the number of staff members of the Department since the days of Professor Sam B. Durham, the lone instructor of 50 years ago. Before the outbreak of World War II there were eight staff members, namely, one professor, two associate professors, two assistant professors and three instructors. The war greatly reduced the number of qualified faculty members, the lack of which is still a big problem to the Department. With the increase in enrollment, however, bright and deserving new graduates have been selected and trained to meet the demand for additional instructors. The current 24-man staff is made up of three assistant professors, seven instructors, eight assistant instructors and six research assistants.

The foregoing figures show that none of the faculty members carries a rank higher than assistant professor. Only one of the 24 staff members has a Ph.D. degree; their ages range from 21 to 52 years. This situation was brought about by the retirement, death or transfer to other institutions of old and more experienced men and the delay, attributed to the war, in training qualified personnel for replacement. This problem has been partly alleviated by the presence, during the past six years, of American exchange professors assigned to the Department under the Los Baños-Cornell contract. The final solution, however, will come in due time as the Department is continuously sending abroad deserving young graduates for further education and training.

Working with the faculty are one clerk, one foreman, one laboratory and office helper, three full-time laboratory helpers, 12 student assistants and 40 full-time laborers.

Physical assets. The Department occupies an area of about 140 hectares devoted to pastures, roads, buildings, corrals, a dipping vat, pit and trench silos, and campus. Of this total space, pasture areas comprise about 134.7 hectares approximately 70 of which are planted to improved forage and grain.

Almost all the buildings and other permanent structures in the Department were ruined during the war. After thirteen years of reconstruction, five large buildings which serve as offices for the staff, as well as lecture and laboratory rooms, have been built. These are the animal husbandry (main), poultry, swine, dairy, and meat processing buildings. They carry a total seating capacity of about 1000. In addition to this, there are 32 minor structures utilized as poultry, hog, slaughter, sheep, goat, feed storage, feed mixing, rabbit and guinea pig houses; bull sheds, veterinary hospital and silos.

As of May 31, 1958, the Department had the following kinds and number of poultry and livestock: cattle (Philippine, Sta. Gertrudis, Holstein-Friesian, Brown Swiss, Red Sindhi, Philamin, Sahiwal, Nellore, Grades), 177; carabaos (Murrah and Philippine), 65; horses (Philippine), 11; sheep (Shropshire and Native), 62; goats (Toggenberg, grades, Saanen, French Alpine and Native), 30; swine (Berkjala, Berkshire, Native and grade), 103; poultry (White Leghorn, New Hampshire, Nagoya, grade, Muscovy duck, Mallard duck and pigeon), 1,138; rabbits (California, New Zealand, Japanese, Native and grade), 74; Guinea pigs, 25.

RESEARCH

The Department has continuously engaged in research since its founding. It is quite difficult to evaluate how much has been accomplished in this field but the number of papers published may give an idea. To date the Department has published a total of 773 scientific and semi-popular articles distributed as follows: poultry, 273; beef cattle and carabaos, 262; swine, 98; dairy, 44; forage, 37; horses, 24; goats, 17; sheep, 11; rabbits, four and meat processing, three.

Most of the studies conducted were on feeding, management, and along physiological lines. Though comparatively few in number, breeding experiments have produced outstanding results as shown by the creation of the pre-war Los Baños Cantonese, Berkjala and Philamin breeds. The war, however, wiped out practically all these animals and post-war attempts to obtain representative animals of these breeds have failed. The Department has decided to abandon these projects and instead start working on the creation of similar breeds following similar breeding procedures. It is felt that this is a more practical approach to follow.

Through years of selection, better feeding and management and judicious mating, improvements have been made on the production qualities of our animals. In poultry, White Leghorn hens average 200 eggs a year while general-purpose breeds grow to one kilogram in weight in ten weeks. With pigs, a daily gain of 0.3 kilogram is not uncommon. Holstein-Red Sindhi grades average about 1,500 kilograms of milk a year; Murrah buffaloes produce only half as much. Pastures improved through proper selection of grasses, cultivation and fertilization average about 24 tons of forage per hectare yearly.

A great boost to the research work of the Department was the recent establishment of its nutrition research laboratory designed to carry on detailed analysis of Philippine feeds. It is hoped that through the use of this laboratory, data on the amino acid, vitamin and mineral contents of feeds will be made available in later years to help put the formulation of rations on a more scientific level.

Studies on the collection, preservation and use by insemination, of bull, boar, and cock semen were started some three years ago. Information derived from these investigations is helping the artificial insemination program of the College and Bureau of Animal Industry.

EXTENSION

The Department is aware that the results of research if not extended beyond the classrooms and laboratories will be of little value. Hence, it conducts field days, symposiums, out-of-town lectures and demonstrations and extends veterinary services to farmers in outlying districts. It also offers short informal courses to government-sponsored or private groups. The common subjects dealt with are poultry, swine, dairy and beef cattle production. Artificial insemination is getting to be popular to ranchers and government extension men. In cooperation with the Bureau of Animal Industry, Bureau of Agricultural Extension and Agricultural Credit and Cooperative Financing Administration, the Department is conducting not only courses in artificial insemination but also actual insemination work in adjacent towns and barrios. It also attends to written personal inquiries and encourages publication of research results in College and other local journals.

The Department has made great strides in the field of animal science during the last 50 years of its existence. Despite limited means, it has managed to keep pace with the demands of a growing livestock-consciousness in the country. However, the Department realizes that it has to do more if it has to maintain its sphere of leadership in the field of instruction and research in animal husbandry. To do this, it needs more support, financial or otherwise, from the government, from its alumni, and from its friends all over the country.

DEPARTMENT OF ENTOMOLOGY

Visiting and Filipino professors discuss the critical need for visual aids like charts in the teaching program of the Department.



A research assistant preparing slides for laboratory classes in entomology and zoology.



Wall charts being prepared for courses in entomology. These charts are used in laboratory classes where the structure of the specimen is studied.



DEPARTMENT OF ENTOMOLOGY ¹

SILVERIO M. CENDAÑA ²

When Dean Copeland opened the College in June, 1909, one of the four members of his faculty was Mr. Edgar M. Ledyard.³ Mr. Ledyard organized the Department of Entomology, was the lone member of the staff and its first head. He was also the right-hand man of Dean Copeland, serving as the College secretary, disbursing officer and cashier, and later, superintendent of buildings.

When Professor Ledyard returned to the United States on August 1, 1914, Professor Charles S. Banks was appointed to take his place. Professor Banks was a well-trained entomologist, and was entomologist of the then Bureau of Science prior to his appointment as head of the Department. By 1915, the Department of Entomology was no longer a one-man department, for Mr. Leopoldo B. Uichanco was appointed as instructor in entomology upon his graduation from College. Professor Banks resigned in April, 1919. For a time Dean Charles F. Baker, an eminent entomologist, but who was a professor of agronomy, took charge of the Department until Mr. Harold E. Woodworth, a young graduate of the University of California, was appointed professor of entomology and head of the Department. Professor Woodworth returned to the United States in 1922. Dr. Leopoldo B. Uichanco, who had returned earlier in the year after obtaining his doctor's degree in Harvard as a U.P. Fellow under the tutorship of Dr. William M. Wheeler, was appointed to succeed Professor Woodworth. Dr. Uichanco was appointed Dean of the College in 1939, but he was retained as Head of the Department until 1956. In the meantime, the present head, who also obtained his Ph.D. degree in 1934 as a U.P. Fellow at the University of California, was first appointed assistant head in 1949 and finally as head in 1956.

From the one-man, two-course Department that it was during the days of Professor Ledyard, the Department of Entomology has grown and matured. Through revision or deletion of its old courses

¹ General Contribution No. 900.

² Professor and Head of the Department.

³ L. B. Uichanco, *Philippine Agriculturist*, 25, 720-748 (1936).

and institution of new ones, the Department now offers twenty-six undergraduate and graduate courses of study to its students. There are now twenty-nine members of the entomology staff composed of the dean of the college, the head of the Department, a research associate professor, four instructors, ten assistant instructors, nine research assistants, two laboratory technicians, and a clerk.

In looking back through the years, the changes that have taken place gain more significance if viewed with their respective backdrops. There are four distinct periods through which the College has passed during its first 50 years, namely (1) the pre-World War II period (1909-1941), (2) the Japanese Occupation Period (1941-1945), (3) the Pre-Cornell Contract Post-war period (1945-1951) and (4) the Cornell Contract Period (1952 to date).

For the Department of Entomology, the pre-World War II period was characterized by steady expansion. Before the war broke out in 1941, the Department staff consisted of eight members, four of whom were holders of the doctor's degree; about 400 students were registered in the 21 courses of study offered; no less than 140 research papers had been published; entomology majors were occupying positions in various government bureaus.

World War II brought the Department back to almost where it was in 1909. During the Japanese Occupation, the staff consisted of the present head and two new assistant instructors. It was impossible to do any kind of research work. But instruction went on throughout the war years, although only two courses, Zoology 1 and Entomology 1, could be offered. Classes stopped abruptly on February 16, 1945. The Biochemical Laboratory (now Soils Building) where in 1943 the Department was forced to transfer in order that the Japanese soldiers could use the Entomology Building as barracks, was burned by the retreating Japanese soldiers on February 23, 1945. With it was burned everything that took the Department 32 years to accumulate: the extensive insect and zoological collections, irreplaceable biological notes, valuable books and all the equipment.

When the College was re-opened in June, 1945, Dean Uichanco, as head of the Department, the present head, and one assistant instructor constituted the staff. Dr. Getulio B. Viado, who left the Department during the occupation did not return until a year later. In 1951 the faculty was increased to five by the appointment of two

new assistant instructors. This period was characterized by vigorous efforts at rebuilding the reference collections in both entomology and zoology.

The Cornell Contract period is an era of complete rehabilitation and rapid expansion. Facilities were improved, and available funds were increased. Experiments on and off the campus could be conducted. Several of the more promising young members of the staff were sent to the United States on NEC-ICA training grants or went abroad on some other scholarships to take post-graduate work. The technical staff was enlarged and re-organized into that of the faculty of instruction and the research staff of the Central Experiment Station. The main function of the former was teaching while that of the latter, research. The functional division is not sharply defined, however, since those of instruction conduct limited research during their spare time, and those of the Experiment Station also help in class instruction as occasions demand. Student enrollment in the Department rapidly increased until a peak of 3,746 students were enrolled in the various courses in 1955. That same year twenty-six members composed the staff; this year, 1959, four additional research assistants were appointed to help in the Rice and Corn Research Program.

In addition to the regular appropriations from the University and from the NEC-ICA, the Department also shares in the trust research funds offered to the College from the NARIC, Coffee and Cacao, and the Central Cooperative Exchange, and the ACCFA research programs. The Department also participates in the Rice and Corn Research Program of the Government with assignment on the control of pests of the two staple crops.

Since its organization the Department has been primarily concerned with instruction and research. However, a small amount of time is devoted to extension work. What the Department has accomplished during its fifty years of existence can be measured by the number of students trained in the Department, by the placement of those who majored in the Department and by the research output of the members of the staff.

INSTRUCTION

From the beginning, class instruction was the main activity in the Department with emphasis on entomology; zoology was given as a necessary background to entomology. Zoology 1 and Entomo-

logy 1 (now Entomology 11) have been required of all students except in 1917 when students were allowed to elect either Entomology 1 or Plant Pathology 1.

Field entomology was emphasized when Professor Ledyard was head. When Professor Banks became head of the Department in 1914, he re-oriented the course in entomology to emphasize life history observations, anatomical studies and insect collection. Zoology 1 remained as background subject.

The first advance course in entomology was given in 1915 to Mr. Leopoldo B. Uichanco, who, in 1918, finished his M.S., major in entomology. When Professor Woodworth became head, a new course, Veterinary Entomology was offered in the Department. With the return of Dr. Uichanco from Harvard in 1922, a new course, Advanced Entomology, was instituted. In 1927, when Dr. Deogracias V. Villadolid returned from his graduate training at Stanford University, where he was sent as a U.P. fellow, zoological activities became intensified and several students conducted research in zoology, mostly in fresh water biology. It was from this group of Dr. Villadolid's students that the Bureau of Fisheries drew some of its key-men subsequently.

With the arrival of Cornell Professor Dr. Bernard V. Travis, two new courses were instituted, Livestock Entomology and Zoology Technique. He prepared teaching syllabi for these courses and helped in the preparation of another one for Advanced Entomology.

The Department began with two courses of study, Introductory Zoology and Introductory Economic Entomology. Today, the Department offers a total of twenty-six subjects, broken down as follows: four zoology and five entomology subjects for undergraduates, two zoology and seven entomology subjects for advanced undergraduates and graduates, and, three zoology and five entomology subjects for graduate students.

The enrollment during the pre-World War II period was largest in the 1930's, when about 350 students registered in the various courses offered in the Department.

If the accomplishment of the Department is to be measured by the placement of its majors, these are the records: The dean of the College, the head and, except for those who majored in zoology in the main U.P., our department staff members are entomology

majors in the Department; the same holds true with the former director of the Bureau of Fisheries, the Deputy Commissioner of the Institute of Science, the prominent entomologists in the Bureau of Plant Industry; sales entomologists in the various chemical firms in Manila, entomologists in the Malaria Control Division of the Department of Health; and keymen having to do with fisheries in the NEC (National Economic Council) and the ACCFA (Agricultural and Credit Cooperative Administration).

RESEARCH

An excellent account of the research accomplishments of the Department during the first twenty-five years was published in the silver jubilee number of this journal.⁴

From 1934 to 1941, numerous scientific papers by members of the staff were published, among which were those of Cendaña and his associates on fresh-water biology (1935 and 1936); Cendaña on the biology of the hymenopterous parasitic genus, *Concophagus* (1937); Panga on termites (1936, 1937); Uichanco on mealybugs (1935), and periodic locust outbreaks (1936); Uichanco and Gines on the phases in locust swarms (1937); and Viado on white grubs (1939).

The Japanese Occupation period was a total eclipse in research for the Department of Entomology. But immediately after the liberation, research was resumed, and the first paper in the first post-liberation number of the *Philippine Agriculturist* which was issued in 1947 was Cendaña and Baltazar's biological study of *Empoasca flavescens* Fabr. This was followed by Cendaña's paper on the treatment of structural bamboo with DDT (1949), then in rapid succession by Viado and Bigornia on the biology of *Rhynchophorus ferrugineus* Fabr. (1949) and Viado on the reproductive capacity of the migratory locust (1951).

With the implementation of the Cornell contract in the Department in 1954, Dr. John G. Matthyse, followed by Dr. Ralph W. Dean, was detailed to the Department to help organize research on chemical control of agricultural insect pests. With the advent of DDT and other synthetic pesticides, screening tests of the new agricultural chemicals on the major insect pests started. Work on the control of rice pests, particularly, the stem borers, *Schoenobius incertulas*

⁴ L. B. Uichanco, *Philippine Agriculturist*, 23, 419-429 (1934).

(Walker), *Chilo suppressalis* (Walker), *Sesamia inferens* (Walker), the rice bug, *Leptocorisa acuta* (Thunb.) consisted of screening tests to determine the relative effectiveness of the various pesticides, the effects of varying schedules of application, and timing of insecticide treatments.

Corn, the second staple crop of the country, has likewise been given a major concern. Screening tests were also conducted to find out the effectiveness of the various insecticides against the corn borer *Pyrausta salientialis* (Snellen), the corn earworm *Heliothis armigera* (Hubn.), and others. Other phases of insect control investigations on corn consisted of seed treatments against the fire ant (*Solenopsis geminata* Fabr.) and planting dates in relation to insect infestation. Vigorous research on rice and corn pests has been made possible first by a large NARIC grant, and now by the Rice and Corn Improvement Program.

Pests of vegetable crops particularly the cabbage worm *Pieris canidia* (Sparman), *Prodenia litura* Fabr., *Plusia chalcytes* (Esper), *Heliothis armigera* (Hubn.), *Epilachna philippinensis* Dieke, thrips, and others have been effectively controlled by insecticides. Research on vegetable insects has been primarily supported by grants-in-aid from the Agricultural Credit and Cooperative Financing Administration (ACCFA) and the Central Cooperative Exchange (CCE).

Coffee and cacao insects particularly the green scale *Coccus viridis* (Green), the mealybug *Ferrisia virgata* (Ckll.), capsid bugs *Helopeltis bakeri* Poppius and *H. collaris* (Stal.), cacao pod borer *Acrocercops cramerella* (Snellen), pachyrrhynchid weevils and wood borers have also been effectively controlled with pesticides. Research on pests of coffee and cacao has been made possible by the Coffee and Cacao Research Grant which started in the latter part of 1955.

Chemical control of fruit pests such as the citrus rind borer (*Prays citri* Mill. and *P. endocarpa* Meyrick), citrus green bug (*Rhynchocoris longirostris* Stal.), mites, chico fruit moth (*Eustalodes anthivora* Clarke), an unidentified pyralid fruit borer of chico, lanzones bark borer (*Prasinoxera* sp. and *Cossus* sp.), and others have likewise been investigated and experiments have demonstrated the practical value of using insecticides.

Research on stored product pests particularly that of corn demonstrated the effectiveness of DDT applied as sack treatment and

the use of inert dusts in controlling most insect pests. Work is underway to determine the degree of infestation of various types of corn and on various methods of storing corn in the Philippines.

Work on the biological control of insect pests is underway. A survey of the parasites of rice stem borers in Rizal, Laguna, and Pangasinan was begun and intensive work is now going on to discover other parasites which might be used in the biological control of rice stem borers in the Philippines. A survey of microorganisms which might be useful in controlling some pests has been started. The present work on the survey of the parasites of rice stem borers is being financed by a grant from the Rice and Corn Improvement Program of the Philippines.

Two former visiting Cornell professors summarized their part in the work in "Research on Insecticidal Control of Philippine Crop Pests in the Philippines,"⁵ and "Philippine Agriculture and Insect Pest Control,"⁶ respectively.

From 1953 on, the published research studies originating from the Department were dominated by the numerous titles on chemical control of insect pests, chiefly of rice, corn, vegetable and lanzones and stored product pests by Dr. Viado and his associates. During this period also, researches were conducted and published on the biology of *Eustalodes anthivora* Clarke,⁷ and *Lymantria lunata* Cram.⁸

EXTENSION

Extension work is an inherent, if not official function of the Department. The Filipino farmer, having no easy access to the services of the extension agents, naturally makes avail of other entities that can provide his need. The Department of Entomology has always been staffed by people capable and willing to help the practising agriculturist. Mostly unofficial in nature, and often at the cost of one's own time, effort, and expense, the staff of the Department from its organization in 1909 to the present, from the professorial head to the assistant instructor, has always done its share of extension work. It has given lectures to farming groups, such as the Citrus Growers Association, rice planters, and other

⁵ J. G. Matthyse, *Jour. Econ. Entom.*, **50**, 517-518 (1957).

⁶ R. W. Dean, *Farm Research*, **24**, 8-9 (1958).

⁷ S. del Rosario and S. M. Cendaña, *Philippine Agriculturist*, **37**, 455-472. (1954).

⁸ E. Novero, *Philippine Agriculturist*, **41**, 505-525 (1958).

groups of specialized farmers. Field recommendations on appropriate farm practices to control insects based on the research findings of the Department have been extended to the farmer through press releases and other means. Active participation in field days, public exhibits, demonstrations, conferences, and other means of communicating with the farming public is a continuing policy of the Department. Other valuable data for public consumption through newspapers and magazines, radio broadcasts, and similar media are released through the Office of Extension and Publications of the College. Non-entomological extension work has also been accomplished whenever the need arose. Careful advise and actual control work on rat infestation, African snail infestation, and other minor pests have been accorded farmers. Extension work will always be an integral part of the Department of Entomology, and it will grow in extent with the activities of the Office of Extension and Publications of the College.

DEPARTMENT OF HOME TECHNOLOGY



Rural homemakers observe a cooking demonstration during the first Homemakers' Day sponsored by the Department in 1954.

Classes in needlecraft and food preparation.



Students serve lunch in the cafeteria management class.

Handicraft and flower exhibits sponsored by the U.P.C.A. Home Technology Association.



DEPARTMENT OF HOME TECHNOLOGY ¹

NENA R. BUSTRILLOS ²

The Department of Home Technology is a comparatively young department which will complete its eighth year of existence this year. The Department was a joint project of men who envisioned a training that would fit the ideal companion for a farmer, in this particular case, a professional farmer. It was a vision of a homemaker who understands not only the husband and the other physical and psychological functions of a home but also the husband's work and interests so that in his absence, she could keep both the home and the farm smoothly running.

INSTRUCTION

Curriculum. The first home technology curriculum consisted of 60 courses. Of these courses, 18 were in home technology, 10 in the natural sciences (including mathematics and physics), 10 in the social sciences, four in languages, two in agriculture and eight each in physical education and euthenics. From time to time some minor changes in the curriculum were made. At present, a regular student in home technology has to spend a total of 228 to 236 hours in class, 18 to 26 hours more than what was required of the student four years ago. Besides the general home technology courses, she also has a selection of two options, home extension or rural education.

Enrollment and graduates. Early in 1951, 16 students registered for the home technology course. The enrollment steadily increased and reached its peak in the first semester of the academic year 1957-1958, during which a little more than twenty times the first group was enrolled. A gradual slight decrease in enrollment has been observed since then.

The first graduates of the Department received their Bachelor of Science in Home Technology diplomas in 1955. To date the Department has graduated a total of 136 young girls. Of the graduates many have found extension work and rural teaching satisfying. Some have gone into research work and others into other government

¹ General Contribution No. 901.

² Instructor and In Charge of the Department.

entities such as the NARRA (National Relief and Rehabilitation Administration), PACD (Presidential Assistant on Community Development), BAE (Bureau of Agricultural Extension) and the Malaria Control Unit. Some manage the family business and farms which they have inherited from their parents.

Staff. The Department started with one faculty member in the person of Miss Priscila Veloira (now Mrs. de Rama). In 1953, there were four faculty members, one of whom was a nurse. All four, with the help of Mrs. Esther Crew Bratton, instituted minor changes in the curriculum. Some faculty members, in the Department of Agricultural Education and the Rural High School and the College Infirmary helped in teaching some of the courses offered by the Department. On October 16, 1954, Mrs. Luz U. Oñate, then with the Department of Chemistry, was appointed in charge of the Department. One month later, the department staff further increased in personnel by two, with the arrival of Miss Dorothy M. Proud, a Cornell Professor, who stayed for six months, and the appointment of a research staff, with the lone research assistant partly detailed to teaching. The College Infirmary still helps with two courses. On the average, each member of the teaching staff has a teaching load of 13 units.

RESEARCH

Because of the heavy academic load of the regular staff and a lone research assistant whose time and energies have at most times been diverted to instruction, the research output of the Department has been rather scanty. To date, only five research projects have been completed by the Department. These include tests on magnolia rice, cooking, eating qualities of various rice and corn mixtures, organoleptic tests of six varieties of lowland rice and a survey of home technology students. Several research studies are currently in progress. These include the following: organoleptic tests on some varieties of lowland rice in the College of Agriculture; studies on washing and cooking of rice in the Philippines; effects of length of soaking and temperature on the cooking and eating qualities of pure milled corn; varietal expansion and gelatinization differences of rice; root crops as rice-substitutes; and methods of quantity rice cookery.

The Department cooperates with the other departments in studies involving eating qualities of cereals, ham processing, corn breeding, etc. It also conducts performance tests of some pieces of

equipment, like the newly designed wooden hand-operated washing-machine, native oven, and stoves.

EXTENSION

The Department participates in field days sponsored by the other departments and conducts lecture demonstrations to homemakers, the RIC (Rural Improvement Club) and local and foreign visiting groups. It puts up exhibits during such occasions as Loyalty Day and Homemakers Day. These activities have afforded opportunities to the Department for imparting useful information on homemaking to adult and young groups of our populace.

Hand in hand with the Rural High School, the Department takes charge of official luncheons and refreshments. To date it has served a total of 128 official parties.

DEPARTMENT OF LANGUAGES

The façade of the Department of Languages.



A part of the department staff.

A class in description, English 3.



A scene from the Department of Languages' presentation of Sam and Bella Spewack's "My Three Angels."



Department of Languages staff members bowing to applause during the 1958 Faculty-Employees Christmas program.

DEPARTMENT OF LANGUAGES ¹

EDELWINA CU-LEGASPI ²

The Department of Languages, which used to be known as the Department of English from its beginnings to the outbreak of the Pacific war, was never formally established. One is inclined to think that it must have earned its title of "department" in the catalogue only after the English work in and out of the classroom had made itself felt as an entity, not a fraction.³ "English Department" first appeared on the masthead of the *Philippine Agriculturist* in 1919 when Dr. Sam Trelease, a College plant physiologist, was editor, and Miss Yule, who was to become the first head of the Department, was assistant editor.

It is noteworthy, though, that despite the lack of recognition of the Department as such, English was among the subjects taught when the College first opened in June, 1909. Among other things, the pioneering students fed their imagination on Longfellow's *Evangeline* and Irving's *Alhambra* in the home of Mrs. Carrie Stein Ledyard, instructor in modern languages. Mrs. Ledyard taught German and French as well. In her absence, Artemas Day, a biologist, pitched in.

For some time the English subjects offered were of a preparatory nature, more or less identical with, if not a continuation of, those given in the public high schools. The first course on the collegiate level was an elective, English 3, instituted under Mrs. Dorothy Rundles. To this subject, Dean Copeland consigned students he deemed defective in English.

In the early years of the College the English Department, aside from teaching English, edited for English, theses and other manuscripts, and copied and proofread for the *Philippine Agriculturist*. Although there was rarely more than one instructor at a time in those days, the Department could teach and read for English, and still serve as a first-aid station for Filipino faculty members and students

¹ General Contribution No. 902.

² Assistant Professor and Head of the Department.

³ Emma S. Yule, *Philippine Agriculturist*, 18, 327-331 (1929).

not taking English courses but whose knowledge of the language could stand improvement.

As a result of the years of "restrained struggle" on Miss Yule's part, English was made a required subject first in the six-year and later in the four-year curriculum. With revisions and readjustments, three elective courses were soon added. One of these courses aimed at giving students "a little training in the translation of the language of science into ordinary speech." A second dealt with principles of argument, business correspondence, and scientific reporting. A third was a survey course in world literature to help the student partake of "the precious lifeblood of the master spirits."

The Department did its share in enriching the cultural life of the students. Miss E. Gertrude Madison initiated the College Sing. A student pioneer who is now a retired professor of animal husbandry fondly recalls the evenings when he and his classmates, gathered around the lively Miss Madison, would sing all their cares away. These sessions brought out many a talent which proved handy during College programs. Miss Margaret Wilson popularized the Mimics, dumb simulative performances designed to give the student a taste of drama. This literary vehicle helped in spreading new agricultural ideas in rural communities and in training students to direct simple literary plays. It is only fitting to record that the proceeds of the first dramatic performance on the campus, "The Court Scene from the *Merchant of Venice*," which was directed by Mrs. Gillis (first semester, 1915-1916), were used to buy the first non-technical books for the library.

As the years rushed by, a number of names, mostly American, appeared on the roster of the English Department. More courses were offered. The services offered by the Department, aside from the regular classroom teaching, were gaining recognition. The future held much promise.

And then came the war.

Of the two remaining American members of the Department, only Mrs. Harriet Richards was interned at the University of Santo Tomas concentration camp; the other one, Mrs. Ruth Mack, had gone back to the States earlier.

With the coming of the Japanese, the Department of English, as such, ceased to exist. The Japanese, determined to efface all ves-

tiges of American tutelage, forbade the teaching of English. The Department taught German and Spanish instead. Strangely enough, though, Mr. Y. Utiyama, educational adviser of the Japanese Military Administration, ordered that teaching of English, not Spanish or German, should be continued till the faculty and students would have acquired a working knowledge of Nippongo. He made it clear that only English reading was to be taught, no composition and grammar. Before a student could graduate, he should know Nippongo. Accordingly, a Japanese instructor, Mr. H. Kongiso, was promptly sent to the campus to acquaint College constituents with the conquerors' tongue. A Filipino national language instructor, Mrs. Josefa Diaz, was made in charge of the Department. Apparently lying low, English was actually functioning shoulder to shoulder with the Filipino national language. As a precautionary measure, the Department of English sought refuge in the camouflaging title of Department of Languages.

When the Americans returned, it was only natural to expect the reestablishment of English as a separate department. But the heavy toll that the Japanese occupation had taken on the members of the pre-war Department made reorganization a most difficult task. Thus, when the College re-opened on July 26, 1945, three English courses for 95 students were offered under the Department of Languages headed by Dean Uichanco in an acting capacity. Miss Aurora L. Samonte of the Department of Agricultural Education was assigned to teach English 1a and 1b; later she became acting head of the Department and acting librarian of the College. English 1b, a completion course for those whose classes had been disrupted by the Pacific war and the battle for liberation, was handled by Mrs. Guadalupe Fores-Ganzon, also of the Department of Agricultural Education. Dr. Gerardo O. Ocfemia, head of the Department of Plant Pathology, was detailed to teach English 10, a thesis-writing course for seniors. English 1 and 10 both aimed at training students in "such written and spoken discourse as will be of practical value to agriculturists in the Philippine Islands."

In June, 1946, English A and B, preparatory courses divided into two-semester work for students who had had only six years of elementary schooling, were introduced. The Department also taught English 1a and 1b (English Composition), English 5 (World Literature), English 10 (Scientific Reporting), English 11 (Public Speaking), English 101 (The Short Story), German and Spanish. Four

faculty members handled these classes; of this number three were detailed from other departments, two from the Department of Agricultural Education and one from the Department of Soils.

There was a change of hands in the school year 1948-1949. Miss Samonte, a most valuable worker, resigned. Mrs. Marcela I. Sevilla, instructor at the UP Rural High School, was made in-charge of the Department on January 1, 1949. Professors Nicolas Galvez of Soils, Melanio Gapud of Argicultural Education, and Jose Blando of the College of Forestry were drafted to teach some courses. A couple of years later Miss Nelly Dunglao, just back from abroad, joined the Department staff.

In 1952 two additional instructors were appointed. In July of the same year Miss Nelly Dunglao was designated acting head, relieving Mrs. Sevilla as in charge of the Department. During this period the copy editor of the *Philippine Agriculturist* and the head of the Department of Soils were on detail in the Department.

Four instructors, two for English and two for Spanish, joined the staff in 1953. One of the Spanish instructors at once took the initiative of organizing the *Circulo Hispanista*, an association of all students enrolled in Spanish.

Five more came in 1954. When the College enrollment trebled far beyond expectations in 1955, the curriculum and the faculty likewise expanded. The Department acquired the services of nine new members. Miss Dunglao, who became head of the Department in November, 1955, resigned on July 31, 1957, leaving the Department of Languages with a teaching force of nineteen; this included the writer who was appointed head on August 1, 1957, an office clerk, and four student assistants. But even with these the Department still had to count on the services of "borrowed talents." Dr. Galvez continued to handle the German courses which were attended mostly by graduate students. With the passage of the Magalona bill and later on the Rizal law, more courses in Spanish had to be offered.

The Department of Languages has travelled a long way since its founding. Of its 19 staff members today, only four have no advanced credits; five have master's degrees (four from abroad, one from the U.P.). Now housed in a building all its own, the old Agronomy, the Department is quite a contrast to the late Miss Yule's English office at the Old College Building with its "one straight-backed chair and a deal table with a small drawer." The interior which

underwent a facelifting in the summer of 1958 was painted in varying shades of blue.

Before it inherited the old Agronomy building in June, 1954, the Department never stayed put in one place. After the liberation the Languages office was where a little space could be spared. Consequently, before it found its permanent home, the Department had "squatted" in the Departments of Agricultural Education, Agricultural Engineering, Entomology, and Agricultural Economics. For some time, therefore, the students were treated to the sight of Languages instructors scurrying from building to building, lugging along books, notebooks, papers, chalk, and even loose blackboards.

It is easy to see that the early post-liberation conditions left much to be desired. The Department especially felt keenly the lack of instructional materials. Just starting to get rehabilitated itself, the library was not of much help. The English teachers, thus handicapped, very often had only their own resources to draw from. They made up for their youth and lack of experience with their knowledge of subject matter, diligence, resourcefulness, interest, and personality. In time they realized that there was no substitute for a well-trained teacher genuinely enthusiastic about his elected calling.

Earlier, in 1953, the English courses were revised to give the students as much as was possible and profitable in the few English courses they had to attend. Accordingly, English 1a and 1b, both three-unit courses, gave way to English 1 (two units), English 2 (two units), and English 3 (three units), thereby affording the English instructor additional hours in which to try to develop communication skills, disseminate information, stimulate independent thinking, and mold character. After finishing these three subjects, the honors curriculum students were required to take English 10 (Scientific Reporting); those in the general curriculum, English 4 (Literature in English); and those in agricultural education, English 11 (Public Speaking). To most members of the staff, English 4 has been the most "fulfilling" subject. One of the few courses in the College that are less concerned with technical skills, it seeks to bring out the individual who can live and work healthily and happily with himself and with others.

The extracurricular work of the Department of Languages has increased even though it no longer proofreads for the *Philippine Agriculturist*. Its members still read for English theses and other manuscripts of students and faculty members. Some are members of col-

lege standing committees, others are resource persons on communication skills for the Community Development Training Center, and a few are advisers of student organizations and the College organ, the *Aggie Green and Gold*. Others direct student plays and sit as speakers and judges in student forums and contests. Half a dozen assist during registrations in various capacities. The foreign students who come to the College inadequately prepared to take up work in English attend special tutorial classes held by Languages instructors. For the Department of Agricultural Education, the Languages staff edited and proofread high school teaching materials prepared by said Department in collaboration with the Bureau of Public Schools. In addition to this, a couple of English instructors are detailed every now and then to handle high school classes, reversing the situation in earlier days when the Department of Languages had to draw from other departments to reenforce its staff. One instructor taught Philippine Institutions 1, a newly instituted course, while the Department of Agricultural Education searched for a qualified person to teach it. Another conducts research for the Philippine Historical Association of which he is a charter member and gives Spanish examinations for prospective candidates for advanced degrees. One other member has been supervisor of the Maquiling School for years.

The Department is not wanting in "lighter" work either. On various social occasions members of the staff have contributed a number or two to programs; the ladies serve on the Loyalty Day luncheon subcommittee. In December, 1958, the Department presented Sam and Bella Spewack's amoral-sentimental comedy *My Three Angels*, the proceeds from which went into the purchase of badly needed stage curtains for the Baker Hall. To give campus residents their fill of classical music, the Department formed the Art Appreciation Club which meets every month. In the fund-raising campaign of the College for the Golden Jubilee celebration, the Languages staff spearheaded the drive by holding a "Mardi Gras" night which netted a neat amount.

Although the Department has concentrated on the practical use of English to agricultural students all these years, it has not lost sight of three of the major goals of all language arts instruction: "wholesome personal development, growing intellectual curiosity and the capacity for critical thinking, and a deeper understanding of the reasons for faith in and allegiance to the basic values of a democratic society." It is every Languages instructor's hope to achieve

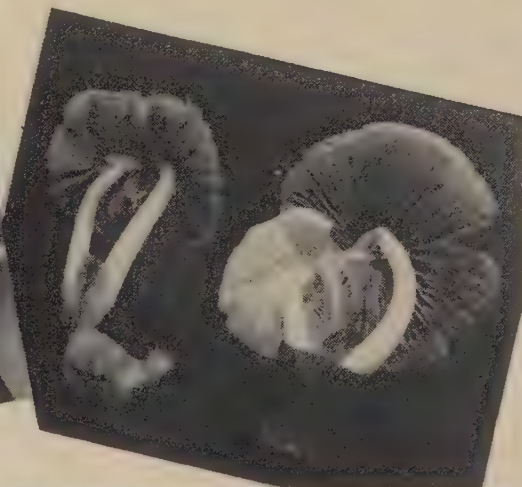
these goals in any subject he handles now and will handle in the future. At the time of the writing of this report, materials for the proposed Speech Clinic, a Rockefeller gift, have started trickling in. Plans are afoot to include a humanities course in the contemplated revised curriculum. When all these plans materialize, indeed, the Department of Languages, like Bacon, will have taken unto itself a vast province.

DEPARTMENT OF PLANT PATHOLOGY

Staff members of the Department of Plant Pathology.

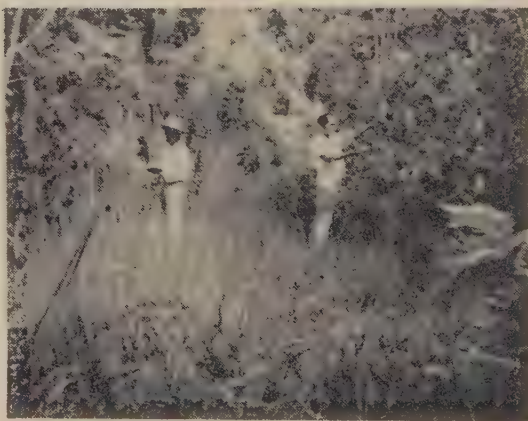


Research assistant simulating artificial rain on glass slides previously spread with fungicide and sticker. He is assaying the effectiveness of rubber latex and oil-base stickers for fungicidal sprays.



Twin banana mushrooms, *Volvaria volvacea* (Bull. ex. Fr.) Kummer observed in an experiment on the artificial cultivation of mushrooms.

Coffee trees at the College plantation showing the striking difference between resistant plants at right and susceptible plants at left.



DEPARTMENT OF PLANT PATHOLOGY ¹

VICTORIA MENDIOLA-ELA ²

The Department of Plant Pathology was organized in 1917 through the combined efforts of Dean Edwin B. Copeland and Professor Charles F. Baker. Instruction in plant diseases was formally begun a year earlier by Professor Otto A. Reinking of the Department of Plant Physiology. The nucleus of the Department, however, can be traced back to as early as 1909 when Dean E. B. Copeland and Professor Harold Cuzner, both from the Department of Agronomy, taught "Botany IV", a course described as plant pathology in the university catalogue of 1910-1911. Professor Charles F. Baker who succeeded Dean Copeland as head, extended the scope of the course in 1913 when he offered it as a laboratory subject. With Professor Reinking as head, Botany IV was renamed Plant Pathology 1. The following year Plant Pathology 9, concerned with studies on fungi, bacteria, and Koch's rules of proof, was added.

INSTRUCTION

Courses. To give the students a thorough grinding in plant pathology, courses have been continually revised, new ones added and obsolete ones abolished, from 1918 to date. There are now 18 courses listed for undergraduate and graduate students. These deal mostly on plant pathology and bacteriological techniques, plant diseases and their control and mycological studies.

Staff. The Department of Plant Pathology staff likewise increased with the student population. While before World War II the Department had only a professor, one instructor, two graduate assistants, an herbarium assistant, and a laboratory helper, now it is manned by one emeritus professor, one research associate professor, one visiting professor, one assistant professor, two instructors, seven assistant instructors, three research assistants; one clerk; two laboratory technicians; six research student assistants; and seven laborers.

¹ General Contribution No. 903.

² Assistant Professor and Acting Head of the Department.

RESEARCH

Philippine fungi collected by Professor Baker and his advanced students made up the bulk of crude research in plant pathology from 1909-1916. These fungi which were identified by European mycologists led Professor Baker to conduct similar studies. The only phytopathological articles published during this period include those of Cevallos (1911), Baker (1914-1916), Ghofulpo (1915), Mendiola and Espino (1916).

In June, 1918, Professor Gerardo O. Ocfemia, assistant in plant pathology, studied rice fungi at the suggestion of Dean Baker. He collected twenty-nine species of fungi from rice around Los Baños and later concentrated his research on the study of a species of *Helminthosporium* which was then the cause of a seedling blight in the College. This study was resumed further in the United States from 1920 to 1923.

Professor Reinking published his "Philippine Economic Plant Diseases" in 1918, giving the first comprehensive account of plant diseases in the Philippines, their symptoms and causes and commendable suggestions for their control. His article was accompanied by illustrations and camera lucida drawings. In the same year the control of plant diseases by spraying was suggested in a publication by Africa entitled "Minimum Bordeaux Application for Control of Hemileia".

The Department of Plant Pathology helped the Office of Crop Physiology and Breeding Investigations of the United States Bureau of Plant Industry at Washington, D. C., from 1918 to 1920 in the citrus-canker studies. In April, 1918, Dr. William H. Weston, Jr., worked on the downy mildew of corn in the Philippines and used the facilities of the Department.

Professor Reinking continued his collection of fungi and completed the Baker Herbarium of plant diseases in 1924. Mr. Emiliano Roldan and Mr. Felicisimo Serrano, who both helped to increase the collection, were taken into the teaching staff. Dean Baker's gift of Indo-Malayan fungi made the geographical collection more extensive.

Worthy of mention among other research studies in plant pathology were those of Reinking (1919) on coconut bud rot; of Weston, Jr. (1920, 1921, 1923) on downy mildew of corn in the Philippines; of Ocfemia (1926, 1927, 1930, 1934, 1947) on bunchy-top of abacá and (1923, 1934, 1939) on the Fiji disease of sugar cane.

From the foregoing articles, the cause of coconut bud rot is conclusively attributed to a fungus identical with *Phytophthora faberi* Maubl., downy mildew of maize, to two new species of *Sclerospora* described as *philippinensis* and *spontanea*, and bunchy-top of abacá to virus, *Marmor abacá* Holmes which is transmitted by the aphid *Pentalonia nigronervosa* Coq.

Members of the teaching and research staff of the Department of Plant Pathology have undertaken research on plant diseases of leading Philippine agricultural products. Since 1920 a total of 110 technical papers have been published in the *Philippine Agriculturist*.

While the Department of Plant Pathology has assisted other government bureaus and agencies in disease control, it has also received aid from private and government establishments interested in control measures. And the expanding program of instruction, research and extension in this College has not left this Department out. With this expansion has come American aid through the Cornell-Los Baños contract and the International Cooperation Administration agreement. The Department has shared and profited from the services of four visiting American professors, namely: Dr. G. C. Kent, of Cornell University, (1952-1954); Dr. A. G. Newhall, of Cornell University, (1954-1956); Dr. C. S. Reddy, of Iowa State College, (1956-1957); and Dr. L. A. Schafer, of Nebraska Wesleyan University (1958-1959).

The financial resources for research were fortified by aids in the form of technical assistance (T.A.) grants from Rice and Corn, ACCFA, NARIC, and the Olin Mathieson Chemical Corporation. With the adequate facilities bought and acquired as gifts, including three greenhouses, a screenhouse, research microscopes, refrigerators, a spray testing turntable, spraying apparatus, glasswares, and other supplies, the research personnel can now carry on their experiments with lesser difficulty. Among the more important problems being resolved are control of plant diseases by spraying and dusting; testing of World Collection of Coffee (Arabica coffee in particular) for rust resistance, control of nematode diseases of vegetables with available nematocides; tests of rice varieties and corn hybrid for disease resistance, and test of the effectivity of fungicides with stickers.

The Department of Plant Pathology looks ahead to intensifying research on the diseases of major crops in the Philippines. With the generous aid of its present and its would-be benefactors, it hopes to find the answers to the plant disease-control problems of Filipino farmers.

DEPARTMENT OF SOILS

Staff get-together for Cornell visiting professors.

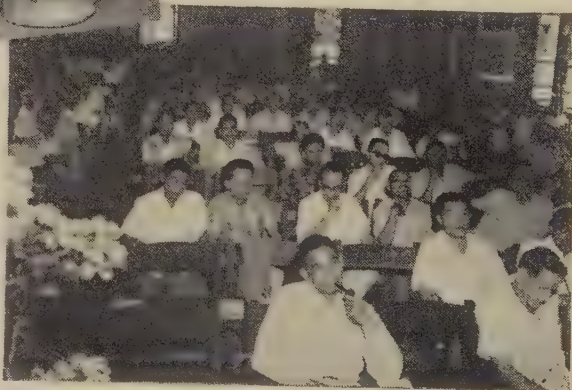


College professors and students of the First Short Course in Soils in summer, 1957, observing experiment on variety $\times$ fertilizer interaction on rice.



Peanut seedlings grown on Palawan soil amended with different fertilizer nutrients.

Participants in the First Southeast Asia Soil Science Conference held in the College in December, 1957.



DEPARTMENT OF SOILS ¹

NICOLAS L. GALVEZ ²

The Department of Soils was established twenty-one years after the founding of the U.P. College of Agriculture in 1909. Before it became a department, soil research was fragmentary and never rounded out into an adequate whole, resulting in the delay of much needed data on the soil-water-plant relationship under field conditions and on the correlative study of laboratory data with field tests. The contributions of the Department of Agronomy on the response of crops to fertilizers, the Department of Agricultural Chemistry on the chemical analyses of soils and the nitrogen transformation in paddy soils and the Department of Agricultural Botany on crop nutrition with the use of solution culture were not only good beginnings but served as nucleus in the formulation of a program of soils instruction and research in 1930 when the Department of Soils commenced activities. The late Dr. Robert L. Pendleton, one of the leading American soil technologists and professor of agronomy at the time, was appointed as the first head of the newly created Department.

The Department which was first housed in the old English building was constructed by repairing two small adjacent structures namely, the greenhouse and the silkworm house. When the College of Veterinary Science transferred in 1933 to the U.P. campus in Manila, the Department "inherited" the old College of Veterinary Science building which afforded a considerable space for classrooms, laboratory and offices for the staff members. The building, however, was completely destroyed during the fight for liberation in 1945. At the reopening of the College in 1945, the Department was housed at the southeast wing of the Entomology building. From 1948 to 1952, it occupied the northwest wing of the Agricultural Chemistry building. In 1953, it moved to the old Biochemistry building which was rebuilt with United States aid fund in 1952 for the Department. With the acquisition of supplies, equipment, more personnel and increased activities, the building became too small to properly house

¹ General Contribution No. 904.

² Research Professor and Head of the Department.

the Department. Hence, the old Cooperative store and a portion of the Library basement were acquired. The southwest wing of the former is used for storing fertilizers; the middle portion, for soil sample preparations; the northwest wing, for plant sample preparations. The Library basement is used for offices and classrooms.

The increased volume of research and instruction work, number of personnel and the expected arrival of \$37,000 worth of equipment from the Rockefeller Foundation require additional space. For this reason, the construction of the Soils annex costing ₱160,000 was approved in 1958. The appropriation was drawn from the Cornell-Los Baños contract funds and the Rice and Corn Program building funds.

INSTRUCTION

Personnel. During the academic years 1935-1937 and 1950-1952, the Department had a one-man staff. When the Los Baños-Cornell contract was implemented late in 1952, however, the staff steadily grew until it reached its present number of twenty-two. This includes one research professor, one visiting Cornell professor, four instructors, four assistant instructors, eleven research assistants and a clerk.

The phenomenal increase in personnel was accompanied by increase in equipment and activities.

At present, only one staff member holds a Ph.D. degree; six are holders of M.S. degrees and the rest, B.S. degrees. At the rate the staff members go abroad for advanced training, it would not be long before the lecturers in the different soils divisions, namely, soil chemistry, soil physics, soil conservation, soil classification and soil microbiology will be Ph.D. holders and the instructors and research assistants, M.S. holders.

In the 1954 batch of the ICA-PHILCUSA grantees, two young promising members of the staff were included. Since then, the Department has been able to send members of the staff as ICA-PHILCUSA*grantees or Rockefeller fellows without interrupting the research and instruction activities. In 1956, a young member of the staff became a recipient of a Rockefeller fellowship which enabled him to finish an M.S. degree, major in soil microbiology. In 1957, a

senior member of the staff was given a Rockefeller fellowship to work for his doctor's degree at the North Carolina State College.

Courses. In the early years of the College there was no separate course in soils much less a separate department for the study of the soil and for specialized instruction therein. In the 1917-1919 catalogue of the College of Agriculture, University of the Philippines, Agronomy 1, Principles of Agriculture, covered soils in the description of the course. In 1920, formal soils instruction and research were instituted in the Department of Agronomy under the direction of Dr. Jose J. Mirasol. For some reason or another his activities were soon diverted to other work and Mr. A. S. Arguelles of the Soils Laboratory of the Bureau of Science (now Institute of Science and Technology) had to be detailed to take over the lecture course until 1923, when the late Dr. Robert L. Pendleton was appointed professor of agronomy in charge of the Soils Division.

As a division in the Department of Agronomy, the courses taught during the school year 1927-1928 were Agricultural Geology, Elementary Soil Science, Soil Physics and Management, and Soil Fertility. These subjects were retained in 1928-1930, except Agricultural Geology, which was abolished.

In 1930, the Division of Soils under the Department of Agronomy, was made a full-fledged department with Dr. Robert L. Pendleton as the head. Since then, the divisional courses were made departmental and augmented by courses in soil bacteriology, special problems, undergraduate soils thesis and soils seminar. The highly specialized course in soil bacteriology was given by Dr. Dionisio I. Aquino who took his Ph.D. in soil microbiology at the University of Iowa.

In 1935, courses were slightly modified in response to the needs of the time and the country. Soil Bacteriology was changed to Soil Microbiology; Soil Management and Soil Survey took the place of Soil Physics and Management; and the study of fertilizers was added to the course in Soil Fertility.

Alterations were again made during the succeeding years. From 1950-1953, Elementary Soil Science and Soil Microbiology were changed to Principles of Soil Science and Microbiology while Soil Management and Soil Survey was sub-divided into Soil Physics and Soil Survey and Soil Conservation. Soil Fertility and Fertilizers

was also made into two subjects. No changes were made from 1953-1955.

With the institution of courses exclusively for graduate students in 1955, major changes again took place and the subjects were increased from nine to seventeen.

Two graduate students have so far been graduated with the M.S. degree, major in soils.

RESEARCH

The research activities of the Department are centered on soil physics, chemistry, microbiology, mineralogy, classification and survey, fertility as well as fertilizer use on major Philippine crops under diverse soil types and management. The expansion of research has been made possible partly by the grants from Mathieson-Menzi and Company, Albatros-Theo H. Davis and Rockefeller Foundation; funds from the College of Agriculture, U.P. Technical Assistance, NARIC and the Rice and Corn Program. The extent to which the research program has been undertaken is far from ideal but the information so far gathered has been very useful in programming research, formulating fertilizer recommendations for farmers and preparing materials for class instruction and press releases.

Fertilizer use. Experimental results showed that nitrogen is the limiting factor of most upland crops in many of the soil types and areas in the Philippines. Ammonium sulfate, ammonium phosphate, urca, and nitrogenous organic matter are, unlike nitrate nitrogen, all good sources of nitrogen for Philippine crops.

Nitrogen application during the wet season is more beneficial when it is given split than when it is given at one time. One-half should be applied at planting time and the other half soon after weeding (as side-dressing for seasonal crops).

During the dry season nitrogen fertilizers should be applied at planting time below the seeds when the soil is still moist. This is necessary for the maximum utilization of nitrogen. Split nitrogen application is more beneficial than single application to perennial crops like coconut, forages, and citrus.

Phosphorus has been found to be deficient in the soils of Palawan so that upland crops hardly grow more than a foot high. It

is noteworthy that soils of adjoining areas which are cultivated under paddy conditions, fail to show response to the application of phosphorus suggesting that submergence solubilizes insoluble and unavailable soil phosphorus.

Potassium has so far not been indicated deficient in many soil types and areas in the Philippines. Sugar cane soils, however, which have been growing the crop for the past thirty years, respond to the application of potash.

Ejecta of Mayon Volcano. The fine ejecta of Mayon Volcano (1938) which caused the wilting of the leaves of abacá (*Musa textilis* Née) and papaya (*Carica papaya* Linn.) was found to be hygroscopic and acidic. It contained relatively higher amount of inorganic constituents insoluble in 10 per cent HCl.

White earth in Mt. Maquiling. The white earth in Mt. Maquiling which is now used to control storage insects of shelled corn has a chemical composition similar to kaolin with traces of Fe_2O_3 , P_2O_5 and SO_4 .

Chemical analysis of soils. The pH values of many soil types under different soil management practices were observed to be within the range for optimum growth and development of major crops. Citrus and coffee soils which have received fertilizers regularly for a number of years have pH values lower than those of soils grown to other crops. The soils of Palawan, however, have pH range between four and six.

Most Philippine soils have high C.E.C. indicating that they have high retaining capacity for cations. Four-year croppings with two corn plantings every year have not significantly changed the cations and anions as well as the pH status of the soil.

The amount of exchangeable potassium in many agricultural soils is higher than the limiting amount established in temperate soils. None of the soils analyzed responded to the application of potash fertilizers.

Soil classification and survey. Catenary association has been found applicable for detailed mapping in the Central Experiment Station Farm. The Los Baños-Ibaan-Lipa and a somewhat poorly drained series (the name has yet to be established) compose the catena, residual from volcanic tuff. Quingua-Calumpang-Bay series

compose the catena of alluvial soils derived from andesitic volcanic materials. The Los Baños area has undergone three series of soil formation, with the top profile overlying two fossil profiles. All of these profiles are derived from consolidated volcanic ash. The fossil profiles which are all latosolic in nature suggest that the same climatic conditions have been existing in the area.

Research studies in progress include the following: nutrient losses through leaching of soils cropped to rice as measured by lysimeter; the chemical and physical characteristics of major soil types in the Philippines; the effects of fertilization on yield and chemical evaporation of major crops in relation to soil condition and cropping practices; mineralization of organic matter in submerged soils; crop rotation in the Central Experiment Station and in Palawan; utilization of stored moisture in soil by corn; phosphorus fractionation studies; and detailed soil classification and survey of soils in the Central Experiment Station.

EXTENSION

The Department has no organized extension work for farmers but it contributes toward the dissemination of information to farmers through press releases and participation in field days sponsored by the College. So far, the Department has published 105 papers; 72 scientific and 33 general contributions. Reprints of published articles are sent to interested parties.

In addition, fertilizer experiments which are conducted on farmers' fields, private estates, branch experiment stations of the Bureau of Plant Industry, farms of agricultural high schools and penal colonies in cooperation with the personnel of the BPI (Bureau of Plant Industry), BAE (Bureau of Agricultural Extension), BS (Bureau of Science), agricultural high schools, Fertilizer Administration, and colonies and the sub-colony of the Bureau of Prisons, serve as demonstration plots on the use of fertilizers. During field days in the localities where these experiments are conducted, provincial, municipal and barrio officials and farmers have a chance to observe the combined demonstration-experimental plots. Staff members are sometimes invited to meetings where they are asked to speak or answer questions on fertilizer use and crop production. Through invitation a good portion of the sugar cane soils in Negros has been classified and surveyed by members of the staff. Oftentimes farmers and ex-

tension workers come to the Department and ask for solutions to their soil problems.

The teaching staff gives instruction on soils and soil fertility in conjunction with the training program of the Community Development Center. A short course in soils in the summer of 1957 was attended by representatives of the Bureau of Plant Industry, Bureau of Agricultural Extension, Bureau of Science, Philippine Sugar Institute, agricultural high schools, fertilizer companies and landed estates.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS

Model Company giving honors to visiting dignitaries.



Corps commander and staff saluting reviewing officer.



Cadet Corps in parade formation.



Los Baños ROTC Band in parade formation.

DEPARTMENT OF MILITARY SCIENCE AND TACTICS ¹

Major ENRIQUE F. ALPAÑO ²

Organized military training in the University of the Philippines started as early as 1912 when all able-bodied male students were required to undergo military drill. In the College of Agriculture military science was organized in 1916. Instruction was conducted informally under an officer of the Philippine Constabulary.

On November 2, 1921, the Board of Regents of the University requested the U.S. War Department through the Governor-General for the services of a U.S. Army Officer as Professor of Military Science and Tactics. The request was granted and on March 17, 1922, the Department of Military Science and Tactics (DMST) became one of the curricular departments of the University. That same year, the Philippine Department of the U.S. Army supplied the cadets with equipment and arms.

Concurrent with the founding of the Los Baños Colleges (College of Agriculture and College of Forestry), an extension of the DMST was established at Los Baños, Laguna, as a department of the U.P. College of Agriculture. The department head of the DMST was designated Assistant Commandant since the Unit was directly under the ROTC Unit (or DMST) of the University of the Philippines at Padre Faura, Manila (presently at Diliman, Quezon City). While it was a part of the U.P. ROTC (Reserve Officers Training Corps) at Diliman, Quezon City, it was also under the Superintendent of the Manila ROTC Units.

In 1951, when the Military Areas were organized, the U.P. Los Baños ROTC Unit ceased to be under the Manila ROTC Units and placed under the II Military Area of the Philippine Army in consonance with the policy of higher headquarters to place all ROTC Units outside the Manila Area under the Military Areas. From then on the Unit became independent from the U.P. ROTC Unit at Diliman, Quezon City, and the senior commissioned officer assigned in the Unit was designated as Commandant.

¹ General Contribution No. 905.

² Commandant.

As an Army component, the Unit has been training its cadets in the infantry branch of service in the two years of the basic course and the two years of the advanced course. However, due to the need for artillerymen for the Units of the Reserve Force, the Unit was given the additional task of training a portion of its cadets in the field artillery in the second year of the basic course and in the two years of the advanced course since the school year 1955-1956.

ROTC instruction was discontinued at the outbreak of World War II in 1941 and was resumed on August 17, 1946. However, during the school year 1950-1951, when the Huk³ uprising was at its height and the rebellion in Batangas broke out, the training in the Unit like in all other ROTC Units in the country was temporarily suspended.

Since the school year 1955-1956 the U.P. Los Baños ROTC Unit has taken an additional responsibility by training cadets from the Laguna Institute located at Calamba, Laguna.

The Unit has contributed a large number of its graduates in both courses to the Reserve Force of the AFP (Armed Forces of the Philippines). During the school years 1952-1959 it produced the following number of graduates: 2,775 (infantry) and 610 (field artillery) for the basic course and 176 (infantry) and 23 (field artillery) for the advanced course.

Some of the advanced graduates of the U.P. Los Baños ROTC Unit who have distinguished themselves in the military profession are: Col. Flaviano Olivares, PC, Col. Jacinto P. Leoncio, Inf. (GSC), Lt. Col. Gregorio C. Katimbang, FA (GSC), Major Domingo Tutaan, PC, Major Virgilio T. Almeda, Inf., Major Isidro Villa, PC, and Major Dominador Dawa, PC.

The yearly activities of the Unit which have become more or less traditional are: parade and review in honor of the deans and faculty members, presentation of sponsors to the corps of cadets, cadet officers and sponsors' ball, parade in celebration of Loyalty Day, parade and review in honor of the Area Commander, II MA, ROTC field day, inter-ROTC competition (whenever scheduled by higher headquarters), annual tactical inspection, turn-over ceremonies and parade and review in honor of the graduating cadets, and graduation exercises and ball.

³ Organized bands which aim to overthrow the Philippine government.

DEPARTMENT OF PHYSICAL EDUCATION

College dean tosses the first ball in an opening game of the Basketball Intramural League.



The 1949 U. P. Los Baños Track and Field team.



The U. P. Los Baños Soccer Team, 1950 Intersection champion.



Members of the U. P. C. A. Folk Arts Society dance the *Habanera Botoleña*, during its inaugural presentation on September 2, 1959.



Women Volleyball champion (Sophomore team), 1956-1957 Intramural League.



DEPARTMENT OF PHYSICAL EDUCATION ¹

WENCESLAO R. MENDOZA ²

The oft-repeated phrase *mens sana in corpore sano* which expresses the concept of a sound mind in a sound body best explains the place of physical education in the pedagogical sun. Perhaps too, it was the acceptance of this concept which prompted the University of the Philippines to finally make physical education courses a requirement in 1920. The year 1920 therefore, formally marked the creation of the Department of Physical Education in the state university. In the College of Agriculture, the Department of Physical Education traces its beginning during the second semester of the academic year 1923-1924, when physical education courses were made a requirement in the Los Baños Colleges.

The Department started activities in 1923-1924 with the appointment of two upperclass students, Messrs. Gonzalo Salazar, B.S.A. '25 and Dionisio Calvo, B.S.A. '26 as student assistants in charge. The following year, Mr. Simon P. Santos was appointed instructor in physical education in charge of the Los Baños Unit. Mr. Ramon Tolentino succeeded Mr. Santos in 1927 followed by Mr. Nicolas Machan who held that position from 1930 to 1948. Mr. Gregorio S. Gascon replaced Mr. Machan in 1948 upon the latter's transfer to the Manila office. In 1952, however, Mr. Gascon was called to active military service and Mr. Machan was reassigned to Los Baños. Later, during the second semester of 1953-1954, Mr. Wenceslao R. Mendoza was appointed to that position vice Mr. Machan who was again recalled to the main office.

In 1955, the unprecedented increase in enrollment necessitated the reappointment of Mr. G. S. Gascon and the appointment of a lady instructor, Miss Florencia Navales. At present the five-man staff is composed of three instructors (Messrs. Mendoza and Gascon and Mrs. Florencia N. Cutillar), a part-time assistant and pianist (Miss Lualhati D. Yñiguez), and a clerk.

At the beginning, the Department had its office in one of the bungalows of the College and utilized for its "gymnasium" the wide open spaces of the campus playgrounds. In 1927, construction of

¹ General Contribution No. 906.

² Instructor in physical education.

the Baker Memorial Hall which was to serve as the permanent site of the Department was started.

The war years left the Baker Hall virtually intact so that as far as the physical plant was concerned, very little repair was done, as contrasted to most of the departments of the College which needed major repair or complete reconstruction.

Through the years, additional athletic grounds and facilities were gradually constructed as much as available funds would allow to meet the expanding needs of the Department. Presently, the construction of a swimming pool which has been wanting is practically all that is needed to more or less satisfactorily complete its physical plant.

Aside from the responsibility of implementing the physical education program of the University, the Department is also responsible for the promotion of athletics in the College. To this end an extensive program of intramurals and inter-section meets are conducted. Indeed, this has been one aspect of the responsibilities of the Department which has become increasingly popular and interesting. Through the years, these meets have created profound interest, enthusiasm, keen rivalry among students and have helped produce a host of Los Baños athletes like Aglibut, Briccio, Calvo, Carr, Catalan, Castillo, Evangelista, Fajardo, Gagalawan, Garay, Lagtapun, Longinus, Malasig, Monsalud, Navallasca, Rodrigo, Salazar, Suarez, and Yatar, to mention but a few, who have contributed to the athletic cause of not only the College and the University, but also that of the nation.

It is of interest to note that in the absence of paid coaches to shape, develop and guide all the athletic teams of the College, faculty members from the other departments have voluntarily helped in coaching some of the teams of the College. The Department has always been grateful for this explicit display of the Los Baños spirit.

In consonance with the revival of the folk arts in other colleges and universities the Department organized in 1958 the College of Agriculture Folk Arts Society. Its inaugural presentation was a folk dance festival which gave glimpses of the vast cultural heritage of the Filipino.

Another important activity of the Department is the holding of the annual field day which features mass demonstrations of gymnastics, folk dances, group games, and other activities representative of the activities in the service physical education program.

THE COLLEGE OF AGRICULTURE HEALTH SERVICE ¹ (U.P. Los Baños Infirmary)

ANTONIO G. TAN ²

As far back as 1914, when the College was virtually a wilderness yet with only a handful of hard-working, pioneering, and persevering faculty members and students, the need for a Health Service was already keenly felt. Led by Mr. Leopoldo B. Uichanco, who was then chairman of the Student Welfare Committee, the students petitioned the authorities for the services of a medical force to look after the health needs of the infant College.

Since the petition was meritorious and rated top priority, a nurse, Mr. Felix Valera, was immediately appointed, followed not long after by Dr. Herminio Velarde, Sr., of the Philippine General Hospital in Manila. After a brief stint here, Dr. Velarde repaired back to the Philippine General Hospital. Dr. Jose Villacorta was appointed to replace him.

The College Health Service grew with the College. From the initial dispensary service given at the second floor of the old Agricultural Economics building, temporary infirmary service was started a few years later in one of the guest houses in front of the old Molawin Mess Hall by the foot of Palma bridge. This service was started by the late Dr. Sixto A. Francisco who succeeded Dr. Villacorta.

The U.P. Los Baños Infirmary was formally opened on June 14, 1930, with the late Dr. Sixto A. Francisco as director. It had a staff of doctors, dentist, nurses, and attendants, confinement facilities for twenty five patients and surgical facilities for operative cases.

In 1932, the late Dr. Francisco transferred to the Department of Health to occupy a bigger and better position. The long list of his successors is made up of the late Dr. Ascalon, and Drs. Villaruz, J. Laico, A. Tangco, R. Bersamin, T. Garcia, and A. G. Tan, the incumbent director who was called to the service in May, 1944.

¹ General Contribution No. 907.

² College Physician and Director of the Infirmary.

The Infirmary building which was used by the American internees during the Japanese occupation was burned by the Japanese when the internees were liberated on February 23, 1945. During the time when the internees were using this building, the College utilized the Home Economics building of the Rural High School as its temporary Infirmary. This building, together with all the existing records, equipment, and supplies, was also set on fire by the retreating Japanese.

The present Infirmary building rose from the ruins in 1948 when war damage funds from the United States were made available. It was re-equipped with U.P. funds, dollar allocations from the U.S. Economic Co-operative Administration, and war surplus hospital equipment and supplies.



The U.P. Los Baños Infirmary

The present College of Agriculture Health Service offers the following services to the College community.

1. Infirmary facilities for twenty-five patients
2. Dental services
3. Medical and surgical dispensary services
4. Referring of cases to hospitals and specialists in Manila with follow-up of same without additional expenses on the part of student-patients

5. Annual pre-registration physical, medical, and chest X-ray check-ups
6. Preventive inoculations
7. Guidance and counselling on health needs
8. Sanitation work in the campus

A staff of two physicians, two dentists, four nurses, a dental assistant, four attendants, a cook, a laundress-kitchen helper, and three student attendants, is always on hand to render 24-hour service to the College community.

THE COLLEGE OF AGRICULTURE LIBRARY ¹

ENGRACIO BASIO ²

At the start the reading matter of this College housed in the right wing of the Administration Building, was cared for by the Property Officer. However, to cope with the cataloguing problems of a bigger book and periodical collection, the demands of a correspondingly increasing student population, and the needs of the expanded research staff for extended research activities, Mr. Basilio L. Hernandez, 1922 alumnus of the College, was appointed librarian in 1922. Mr. Quintin A. Eala of class 1927 started his ten-year term as book caretaker in 1927. The present librarian, Mr. Engracio Basio of class 1931, who officially served from 1937 to 1947 and who has resumed service since 1952, is assisted by 15 full-time workers and 16 student assistants.

From 1909 to 1945 the College of Agriculture Library acquired over 20,000 volumes of printed matter. Unfortunately this large collection was destroyed during the fight for liberation in February, 1945. The College resumed operation in August, 1945, with only 180 books and a few pamphlets picked as remnants from the looted department offices. However, with the acquisitions made through PHILCUSA-FOA and the generous donations from several organizations and individuals here and abroad, most notably from the Rockefeller Foundation, the Library has now a collection exceeding by far that which it formerly had before the war.

In August, 1954, the Library transferred to a two-story building of its own, complete with a basement, spacious reading rooms, stack rooms and work areas and built on PHILCUSA-FOA funds. Its reading rooms which have a seating capacity of 600 are well-ventilated, adequately lighted and appropriately furnished.

The books and pamphlets, classified and catalogued according to the Library of Congress scheme, are listed in a card catalogue. The serial holdings consisting of journals, bulletins, circulars, reports, proceedings, and leaflets are likewise classified and are made

¹ General Contribution No. 908.

² College Librarian.

more accessible in pertinent reference aids such as serial lists, index journals, abstract journals, review journals, bibliographies and card indexes. A vertical file consisting of a mass of valuable reference materials of monographs, reprints, separates, and loose serial publications is maintained. The Library also has audio-visual items such as maps, motion pictures, microfilms with microfilm readers, and microcards with microcard readers.



The College Library

A number of serials which have been received are not covered by the bibliographies and the standard index, abstract, and review journals. The Library supplements this with another documentation file involving reference information contained in both local and foreign publications. With funds from the NARIC Grant to the College and the Rice and Corn Program of the Philippine government, the Library compiles an abstract bibliography of publications on rice and corn.

The College of Agriculture Library serves to help the College implement its objectives of resident instruction, research and extension. It makes available its entire collection of printed literature to the students, members of the faculty, and research staff of the Central Experiment Station. With due authorization, it even affords

services to visitors. It acquires, collects, assembles, and preserves the needed books, pamphlets, serial publications and other printed materials pertaining to agriculture and allied fields covered in the different curricula.

In addition to routine services, the Library does other work that enhance the usefulness of its resources to instruction and research. Books, worn out with use, are repaired or rebound and periodicals are bound. The file system maintained for pamphlets and serial publications helps facilitate a speedy search for and shelving of reference materials.

The main concern of the Library personnel is still the efficient extension of services from this growing library stock of books, pamphlets, periodicals, and maps.

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UNIVERSITY OF THE PHILIPPINES
(As of March 31, 1959)

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^a On Rockefeller fellowship in the U.S.A.

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^a On ICA-NEC fellowship in the U.S.A.

^b On leave.

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LIST OF AVAILABLE PUBLICATIONS

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